Issue 136 • 15th June 1991 • 88p

TONS OF TIPS FOR YOUR MACHINE

see pages: 16-27, 30, 32-33, 44-45...

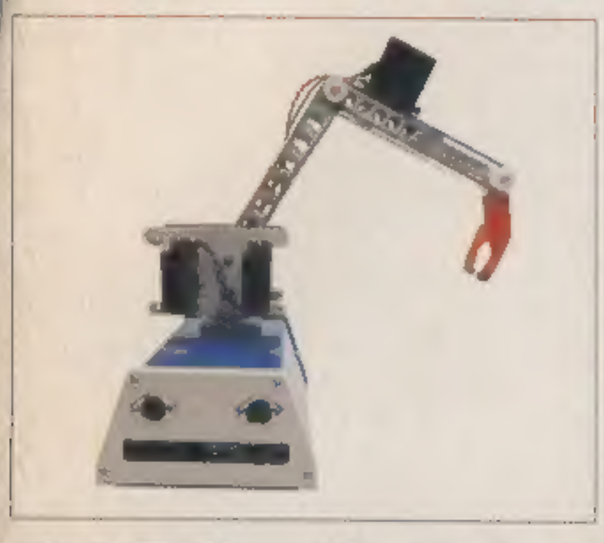
NEW COMPUTER EXPRESS

FIRST NEWS • FIRST REVIEWS • BEST BUYS • YOUR WEEKLY GUIDE

CD-I ARRIVES!

AND THE CD WAR ERUPTS
Is buying CDTV still a smart move?

AMIGA



ROBO TO GO
Executive toy – or serious add-on?

CDTV

Kodak PHOTO CD

PICTURE THIS!
Kodak's Photo-CD comes to the CDTV

PLUS: The hottest news & latest launches from Chicago's CES show

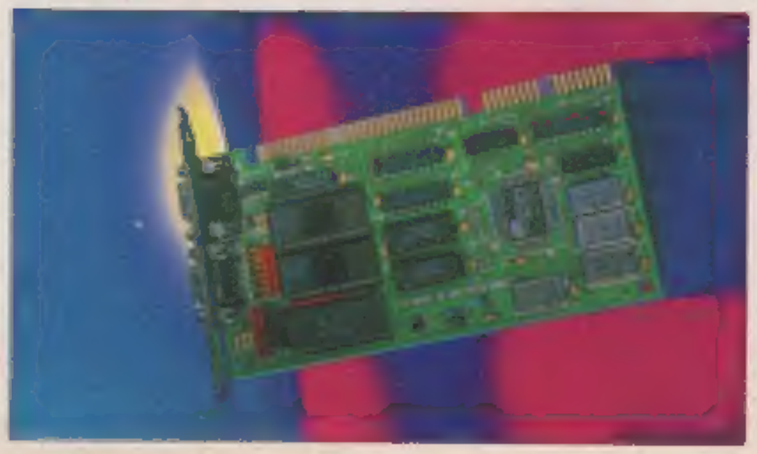
GAMES

PREHISTORIK
Is it a dinosaur or a digital delight?

THE TINY PC

It's the smallest desk PC in the world - p49

WHAT'S NEW FOR THE PC?



256 colours on your screen for £90! - p11

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Future PUBLISHING Your guarantee of value

Frontend

The unusual and the unexpected, the queer and the quirky – that's what Frontend is all about. It brings you the news that normally hides between the lines

• Computers are being used in shops in the US to help consumers make informed purchases. First up, are brands of pet food. So, will American shoppers soon be taking their cats and dogs along with them?

Make an intelligent choice

Computerised shelves are now helping shoppers make 'intelligent product choices' in the pet food aisle of the Kal Kan store, Denver.

The computerised units ask the shopper about the weight, age and 'activity' of the pet. Once these answers have been analysed, the chip-adviser prints out its recommendation for the correct cat food, finest fish feed or delicious dog dish.

The company behind the units is Thinklabs. Its president, Clive Smith said: "Thinklabs expects that interactive technology will be used to sell everything from vitamins, foods and over-the-counter pharmaceuticals, to lawn fertilisers and batteries".

The combination of the intelligent shelf and the talking sandwich (*Express* 127 – 13 April) which inform purchasers of sell-by dates could make shopping a more adventurous pastime than at present. ■

COMPUTER BLAMED FOR LAUDA AIR CRASH

The crash of the Lauda Air Boeing which caused the death of 223 people in Thailand has been blamed on a computer error.

According to the Black Box recording, the aircraft went down after one of its engines went into reverse thrust, an action which is only supposed to occur during landing of the plane. A warning light went on prior to this, but a check list indicated that this error would 'clear on landing'.

Lauda takes up the story: "About a minute later, co-pilot Josef Thurner said the reverse thrust deployed and for about three more seconds you can hear heavy breathing as the pilots struggle to bring the plane under control. Then all you can hear is the overspeed warning sounding and then it's all over".

Apparently the engine and warning systems are computer controlled, and it was somewhere amidst the miles of cabling and circuitry that the fatal fault occurred. The investigation continues. ■

• Nikki Lauda – headlining news with a crash, but this time he's not in the driver's seat.

Send more brains!

This month sees the launch of more indigenous UK virtuality. A 'brain machine' which, according to the London Neuro Centre, "makes use of light and sound to alter the users' brainwave states".

The machine is called the InnerQuest IQ-Tutor and comes with four pre-set programs. These are aimed at enhancing the following mind states:

- Motivation/stimulation
- Creativity/visualisation
- Relaxation/learning
- Deep relaxation/sleep

• Vaguely VR-ish – but is he mental or what?

The machine comprises Eyestim glasses and headphones which play repetitive sounds, and strobe lights into the eyes of the user. The idea is that the synchronisation of the two stimulants in some way affects the brain.

Price for the InnerQuest is £99.99. For more information call the London Neuro-Centre on 071-284 4769. ■

Computer clobbers students

Students in Islington, London, are even poorer than usual because of a computer.

A faulty interface between Islington council's mainframe and the education department's computer system meant that students' details could not be automatically downloaded. The details had to be input manually by staff who worked at weekends.

The actual error occurred in one of the two UNIX boxes which connect the mainframe with the local area network (LAN). For some unknown reason, Islington's computer group had not realised that the mainframe, which handles data in the form of records, was not compatible with UNIX, which handles the same data as a stream of bytes.

Speaking on behalf of the strapped-for-cash students, Liberal Democrat Sarah Lundford said: "The council thinks that efficiency is a dirty word, and for too long it has paid no attention to it. Why on earth couldn't it buy the right computers?" Punningly she also commented: "It is those who are most dependent upon regularly delivered services who suffer most, and that really bugs me".

Islington council has called in professional help to deal with the problem, and a spokesman for the council claims: "ICL is working on a solution for us, which should be here within a matter of days". ■

• Students are forever complaining that their grant cheques are inadequate. But Islington academics have more cause to moan than others.

• Judges will have their jobs cut out for them with 780 computer related legal disputes underway.

USERS VS SUPPLIERS

A survey carried out among 250 firms of solicitors has come up with some startling results about the relationship between computer users and suppliers.

The report, which was carried out by Mathiason Turner Associates, claims that 768 legal disputes are currently underway. More than half of these relate to purchases of less than £10,000.

In an indictment of the way customers appear to be treated, these figures are 42 per cent up on the last survey carried out in 1989.

Mathiason Turner has taken the raw figures and extrapolated the startling fact that some 3,000 cases of computing discontent, ranging from poor software and hardware support, to employment, are currently occurring in the UK. ■

LOO-NACY

Computerised lavatories will be appearing in Hertfordshire this year. As part of a £10,000 water saving effort instigated by Herts County Council, the public conveniences will be equipped with chip attendants. They will monitor blockages, and control flush rates. Whatever next?

GET REAL! • GET REAL! • GET REAL! • GET REAL!

Debt set

Two of Apple Computers high flyers are now liable for $100 million worth of lost shareholders' money.

Mike Markkula, Apple's vice chairman, and John Vennard, ex-Apple manager, were found guilty of making false claims for a new disk drive in 1983. A former chairman of Apple was cleared of all blame in the court case. ■

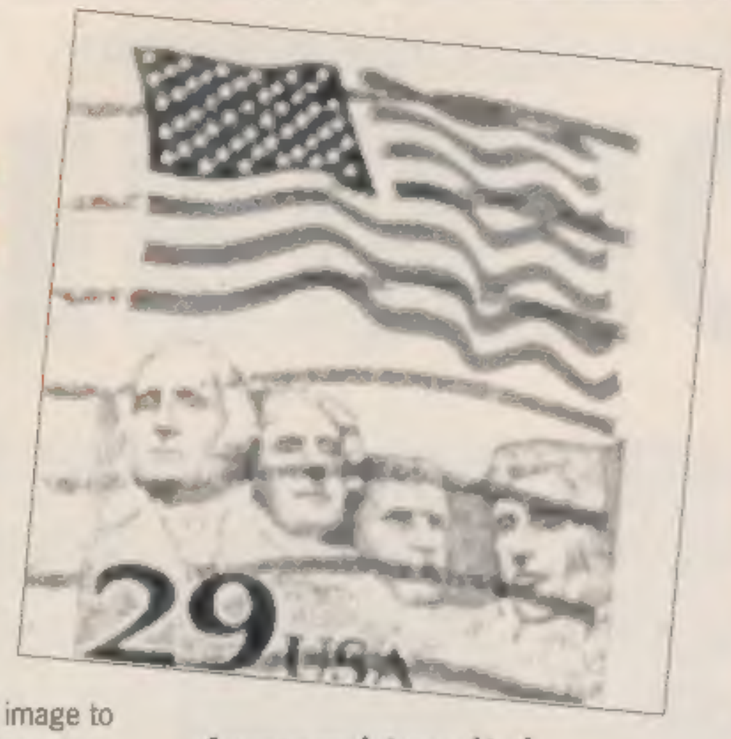
Computer cock ups • Users fight back • IT jobs on radio • U

STAMP OF EXCELLENCE

A computer is being used for the first time in the design of postage stamps in the US.

American artist Joni Carter teamed up with IBM in order to design commemorative stamps for the 1992 Olympic Games. Carter, who exchanged paint for pixels in 1981, claims: "To my knowledge I am the only travelling sports artist who uses computers and multimedia as a medium".

Carter uses two IBM PS/2 computers in her work. One acts as a display for the sporting image to be painted, the other acts as the canvas. She also uses *Lumena* software, Targa+ Micro Channel board and a Wacom graphics tablet with a pressure sensitive pen.



• Computer are being used in the design of stamps. The artist, who specialises in sporting themes, says she has a hard life: "You go to the world's top sporting events, hang out with the rich and famous and go to the Super Bowl every year". And how do you get a job like this? – You have to use an IBM PS/2.

GET REAL! • GET REAL! • GET REAL! • GET REAL!

STUPID BOY!

Mathematician, John Allen Paulos is dampening the ardour of Artificial Intelligence research. The American academic claims computers will always remain ignorant. He says: "They have no means of knowing that even though fur coats are made of fur, raincoats are not made of rain".

London Calling

Readers in the London area should be aware that Capital Radio is to run a Computer Week from 17 to 21 June.

DJs and presenters will be announcing over 200 job vacancies in information technology, ranging from operators to analysts and programmers.

AMIGA AND ST OWNERS

A fortnight from today you'll be playing this complete 16-bit game, courtesy of Express – but only if you move fast. Turn to page 58 now...

• This 16-bit game is called HATE. It is brutally addictive. It can be yours for less than you ever thought possible. Turn to page 58 immediately...

Strike two: you're out!

Staff at Barclays Bank computer centres around the country are readying themselves for a ballot which could lead to an all-out strike.

Noel Howells, a spokesman for the Banking and Finance Union (BIFU) at the centre of the pay and bargaining row, told *Express*: "The ballot will be carried out in secret by post. The decision will be made on a straight majority. There are two basic reasons for the dispute. The bank is trying to split the computer operators into two groups, management and non-management, we see this as divide and rule. It is also trying to bring the management under performance related pay."

A spokeswoman for Barclays sheds a very different light on the affair: "We have gone from a basic offer of 8.8 per cent pay to 9.2 per cent, but the union is still asking for 14 per cent. As for the split between management and non-management, this has been up and running in other areas of the bank since the start of 1990. We have contingency plans for a strike. Basically, it's no big deal as far as we're concerned. The dispute has been quiet for over a week now".

• Barclays Bank: could a strike over pay mean that you won't be able to use its cash machines?

SHOOT FROM THE LIP

Just what has the computer world been talking about this week? And, more to the point, what did it think it meant? You can read the most absurd, funniest and ire-inducing things in Shoot from the Lip.

● *'Win a vertical workstation'*: from a press release by Esselte Dymo Ltd. The 'vertical workstation' in question is not a Compaq Tower system –it's a desk.

● *"Clinging to OS/2 was a marketing mistake"*: James Storm president and chief executive of software developers Imara Research. He continues somewhat butt-coveringly: *" We are really committed to OS/2"*.

● *"The reality is that environmental sensitivity costs money"*: the green gospel acccording to King Lee, chief executive officer of Xtree.

● *"That really bugs me"*. Liberal Democrat, Sarah Lundford punning away about a computer cock-up in Islington.

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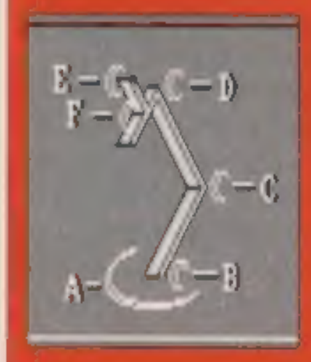

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Attention! Amiga and ST owners
HATE is the name of the game. And it could be yours. Turn to page 58

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As Philips launches CD-I in the US, *Express* asks: "Have Commodore

CD-I STORMS IN TO

After half a decade of hype and speculation, CD-I (Compact Disc Interactive) has finally seen the light of day. The four companies involved – Philips, Matsushita, Sony and Nintendo – are, respectively, the three largest consumer electronics companies and the biggest computer entertainment corporation on the entire planet. But has Commodore's rival CDTV system already built up too much of a lead in Europe to be caught? In this special report, *Express* assesses the odds and attempts to pick the likely winner

Philips has won the race to produce and launch the world's first commercially available Compact Disc Interactive (CD-i) player, beating Sony into the market.

Price for the systems is currently $1,400 – though Julia Davis of Philips Multimedia in the UK told *Express* this week: "The planning has been for a price of $1,000. We are not sure why the extra $400 has been added, it's just the way they do things over there."

"There's no doubt this will be a close and, er, *interesting* battle"

– Commodore UK

Express can reveal that the UK version of CD-I will differ in important respects from the US one. Scheduled to take place within the year, it will be badged Philips rather than Magnavox and, crucially, will include full-motion video facilities. The US machine requires an add-on cartridge to achieve the same effect.

As for Commodore's rival CDTV machine, Sandy McKenzie of Philips Multimedia is little short of contemptuous: "When you take one PC maker versus one of the world's largest consumer electronics manufacturers, it's like David and Goliath. We don't see Commodore as a serious threat."

Using its American consumer electronics name, Magnavox, Philips demonstrated its CDI190 at Chicago's enormous CES show. Like Commodore's competing CDTV (Commodore Dynamic Total Vision), the CDI190 looks like a conventional home video recorder except it is fitted with a drawer-loading CD bay. This takes both standard 3-inch and the "album" five inch compact discs.

COMPUTER-FREE ZONE

Taking the Commodore angle that the keyboard is the add-on

• CD-I: some lucky swine in Chicago gets to have a go

most non-computer users find off-putting, the CDI190 makes use of an infrared controller in the form of a one-handed 'thumbstick.' It controls an on-screen pointer used to interact with the WIMP interface. The thumbstick can also operate as a joystick in game play.

Software for the system is already being developed by Nintendo, the Smithsonian Institute and the Children's Television Workshop (home of *Sesame Street*).

Two titles are to be bundled with the machine, chosen from four categories: children, music, games and special interest – which includes the Time-Life Photography CD. Users focus a simulated camera on a moving picture and take a virtual photograph. This is then displayed on screen and shows blurring, framing and lighting.

TIME BANDITS

The CES CDI190 demonstration occurred during a multimedia seminar where Tandy's Multimedia PC (MPC), Kodak's Photo CD and Commodore's CDTV were also on show.

However, jockeying for media attention appeared to be in full effect. Philips' demonstration over-ran its alloted time, leaving Commodore's Head of Interactive Multimedia Development, Nolan Bushnell, with just a few minutes to illus-

• Nintendo makes a stand at CES – and climbs into bed with Philips

trate the qualities of CDTV.

The seminar eventually over-ran by half an hour, but not before further CDTV-versus-CD-I statements were made by the CD-I side.

The in-fighting escalated when Philips and Kodak both denied Commodore's claim that CDTV would be compatible with Kodak's Photo CD project, maintaining that Commodore would need to develop a CDTV2 machine to make this feasible.

According to Commodore, CDTV owners will be able to take their holiday photographs into high street bureaux, and have them converted over to CD format.

The new, Compact Disc quality snaps can then be loaded onto CDTV and played back using a standard television set. Each CD will be able to hold up to 100 35mm frames.

June 1992 is the planned date for the introduction of the system in this country. CBM's managing director in the UK,

"Philips have changed their tune dramatically. We are considering our position"

– Virgin boss Nick Alexander, CD-I developer (or not?)

Steve Franklin enthused: "Photo CD will help drive the sales of multimedia and the CDTV player".

Kodak in the UK, however, seems to have a different attitude to CDTV and Photo CD. In fact a spokeswoman for the company refused to confirm *any* of the details.

The implication is that Commodore will be independently adapting CDTV for compatibility with Photo CD without recourse to any official agreement with Kodak.

Everything you're ever likely to need to know about CD-I

● CD-I is a new computer system developed by the three largest consumer electronics companies in the world – Philips, Sony and Matsushita – with Philips beating the pack to the punch with the world's first commercially available Compact Disc Interactive (CD-I) player, the CDI190.

● CD-I, like CDTV from Commodore, combines text, sound and pictures on a single 650Mb CD – the equivalent of 900 floppy disks. With all that storage space available, software developers have plenty of room to lay the text, sound, animation and pictures on top of one another to create a multimedia environment.

● At the heart of the two module system is the Multi Media Controller (MMC) which provides system control and signal processing and features ports for RS232 communications, printer, keyboard and joystick besides video and audio input/outputs.

● There's also a built-in Personal Memory Card slot enabling users to safeguard program material, input their own data and store personal information, in much the same fashion as a floppy disk. The 1Mb MMC connects to the CD-I Player Module which houses the CD drive.

● All user interaction is achieved by an infra-red remote control (or mouse) incorporating on-screen cursor control, via a tiny joystick. There's also a full array of search, play and channel switching buttons.

● An as yet unpriced optional Expansion Module provides twin 2Mb 3.5 inch floppy drives for program data storage, a built in modem and interfaces for hard disk, SCSI and Ethernet.

● This module enables program developers to convert both Macintosh and PC image, graphics and sound files to CD-I format via two software based CD-I Author packages.

● Up to a whole hour of moving video can be stored on either three or five-inch CDs and displayed via a standard television. As such, the system opens up tremendous opportunities for leisure, education, training and simulation applications. As a 'world standard', CD-I is configured for would-be software authors to produce their own program material.

● In its initial stages, CD-I was specifically targeted at the leisure market, with education and business ranking second and third in importance. With Japanese games giant Nintendo declaring its support for the Philips CD-I developement, this aim is further enforced.

● The intended price of around £750 should ensure massive sales particulary as the unit is designed to sit along side hi-fi equipment and run through conventional television sets.

● Already just about every leading leisure software company in Europe and the USA is known to be developing CD-I titles – indeed Philips has gone so far as to set up a CD-I production facility at one of its UK sites in Dorking and is inviting potential publishers to co-operate on joint ventures.

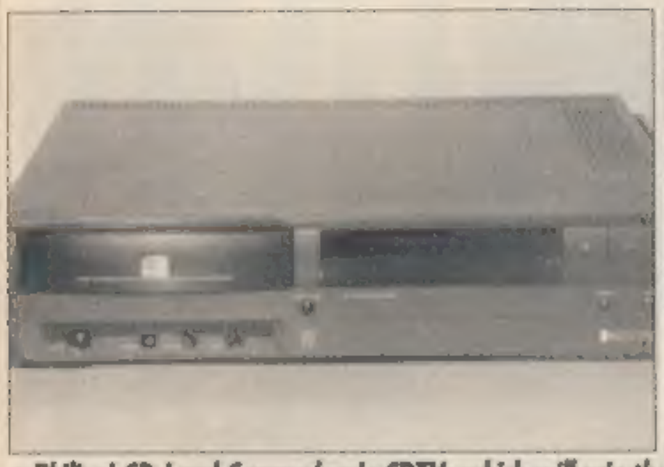
● Meanwhile, the company has tied up publishing deals with top publishing groups such as Time/Life, CBS, Columbia and Polygram, along with leading international television companies and museums.

● CD-I systems will be available in Japan and the US later this year, with a European launch pencilled in for mid-1992.

COVER FEATURE

and CDTV *really* got a snowball's chance in hell?"

CHALLENGE CDTV



• Philips' CD-I and Commodore's CDTV: which will win the CD war? Commodore's Steve Franklin and company are adamant that they've built up too long a head-start to be caught. But when the world's three biggest consumer electronics companies are on your tail, you'd better be very sure indeed that you've done your sums right.

THE VIEW FROM EUROPE

The projected European launch of CD-I is an event of massive importance and interest, both to Commodore's rival CDTV project, and UK software developers.

Commodore Press and Public Relations Manager Andrew Ball sounds confident that CDTV can beat off CD-I: "We always knew there was going to be competition, and from what we know about CD-I it's got some very nice features. There is no doubt that it will be a close and, er, *interesting* battle.

"But CDTV is already available in this country – a year ahead of CD-I – and we're building up a very healthy software base. By the time CD-I gets over to Europe CDTV will have had a good year's drop on it, a lead which should not be underestimated. By the end of next year we intend to have at least 150 titles up and running for CDTV.

"One crucial point is support for the devices.

"It's like the Betamax/VHS battle again. It is absolutely vital to get developers in hardware and software to support the products after the initial buzz has worn off.

"We have funded software development, and we are not going to continue this because we don't think it's necessary any more. People want to develop for CDTV.

"It should also be borne in mind that we are not frightened to licence our technology out to anyone. It is practical to think of a badged CDTV system.

"In fact we've been in discussions with developers, whom I can't name, in both the United States and in Japan."

One company approached for development work by both Commodore and Philips is Virgin Games. Everything seemed to be going well – until the CD-I project began to sour. Virgin boss Nick Alexander explains how Virgin feel about CD-I: "CD-I has been waiting in the wings for some time now.

"Although it is potentially a very powerful system, from a European perspective there is no clear idea as to Philips' software position, which is a perception across the board in the UK.

"In fact, since our early discussions with Philips they would appear to have adjusted their position dramatically, and as a result we are seriously reconsidering our position.' ■

● Coming soon: look out for a head-to-head review of the kit, as *Express* pits CD-I against CDTV. Don't miss it!

PHILIPS CDI190: THAT TECH-SPEC IN FULL

So it's finally arrived - a commercially viable CD-I (Compact Disc Interactive) player has finally seen the light of day. Software support, from Japanese software giants Nintendo among others, and hardware support, from Matsushita and Sony, are certainly impressive.
But what does the actual hardware offer to users? Find out below...

PRICE:
- $1,400 (predicted UK price, June 1992: £750)

COMPATIBILITY:
- Three and five-inch standard audio CD
- CD+ graphics discs and visuals
- Photo CDs
- CD ROM-XA 'bridge'

SPECIFICATIONS:
- Maximum audio capacity: 19 hours (audio only on CD)
- Maximum text capacity: 250,000 pages (text only on CD)
- Maximum graphic capacity: 7,000 photographs (graphic data only on CD)
- Maximum full motion video capacity: 72minutes. (Video only on CD)
- Motorola 68070 co-processor
- Infra-red remote control, as well as mouse and keypad operation
- 1Mb RAM
- 16 million colour variations
- Digital video and audio processing
- Bitstream Digital/Analogue conversion
- Full-motion, full-screen, based on Motion Picture Engineering Group (MPEG) standards.
- Compatible with PAL, SECAM and NTSC television standards. Futher adaptability with High Definition Television (abbreviated, predictably, to HDTV)
- Playable via all current television and stereo hi-fi systems

ACCESSORIES:
- Mouse
- Infra-red receiver

EXPRESS COMMENT:

THE CD WAR STARTS HERE

The launch of the Philips Magnovox CD-I system is bang on schedule. Similar CD-I unit releases in Japan will happen later this year from companies such as Sony, Technics, Panasonic, Sanyo and Pioneer.

With that kind of international high street muscle just waiting to kickstart the new platform into gear you'd expect Commodore to be quaking in its boots: CDTV is being pitched as a 'buy and play' unit, too.

The marketing men of both factions insist that both CD-I and CDTV are consumer products with no overt computing connection: they're not meant for techies, so we're told, they're meant for lounges.

The vagaries and frustrations of PC-style keyboard input simply don't belong in the modern world's sitting rooms: what the everyday Joe wants is to turn on and tune in. Simple as that. We can therefore expect much of the marketing conflict to be taking place in the showrooms of high street stores and the glossy pages of supplements and style mags.

CDTV: THE AMIGA OWNER OPTION

But what then are we, the computer literate, to do? If neither is designed for people who know about computing and who want to use them for computing applications, how are we to get in on the act without resorting to forking out £600 or so for a stand alone magic black box?

Commodore has got its approach right, lining up both a CD drive you can plug into your Amiga and disk drives and infra-red keyboards for the CDTV itself. There, at least, is a clear invitation to upgrade.

If you already own an Amiga you can get your hands on some kit that will bring you the digital delights of CD-ROM technology. If you don't own an Amiga you can buy a CDTV and run all the Amiga software you can find. Result? Commodore wins both ways.

Philips, though, isn't interested in supplying these. It has no plans to introduce any keyboards or disk drives for CD-I, which is probably just as well since it has no software base and no familiar operating system.

Sure, it has professional CD-I machines which offer real computing facilities but these are designed for development and authoring applications. But then perhaps Philips isn't unduly concerned about the mere 600,000 Amiga owners Commodore claims will buy add-on CDTV drives. It has a longer history of better distribution and marketing to target the whole wide world in its sights. And it has Sony and Matsushita (Panasonic) as partners.

CDTV: A SLIGHT REASSESSMENT

In the past *Express* has intimated that it sees no long term future for CDTV once CD-I comes to town. We now want to revise that position just a tad. (Cue sound of swallowing pride.) We expect to see CDTV succeed.

Not because of any technical superiority, far from it, and not because it's got a whole clear year to grab the high ground before CD-I arrives here. But simply because of its Amiga compatibility and the installed base of Amiga software.

How big that success will be is, of course, a different question. While it's perhaps artificial to draw too many comparisons with the VHS and Betamax video war at the beginning of the eighties, it's true that Betamax lost out despite technical superiority and massive backing from Sony. It lost because it didn't have the software titles to support it.

For the computer user, CDTV is clearly the format to go for and in this industry it will clean up. So if you're into computing forget CD-I. Buy CDTV now. Better still buy a £300 add-on drive for your Amiga when they come out in September.

But in the electronic showrooms of tomorrow there's no competition. Sony owns the rights to just about every film, video and music title you can name. And what they don't own they've leased. In five years time there won't be any CDTVs in the nation's lounges. There will be CD-I units. CDTV will be back where it belongs – in the bedrooms.

FOR YET MORE ABOUT CD-I TURN TO PAGES 55 & 56

NIBBLES

Domark invades US

Domark appears to be unaware of any recession. It is expanding its interests into the USA. As Domark co-founder Dominic Wheatley explains: "We've had quite a number of our products published by other companies (in the US)... Now its seems sensible to establish our own operation. We will do all our own marketing which has always been our strength in Europe".

The companies first Stateside launches will be *MiG-29 Fulcrum*, *3-D Construction Kit*, and *'Nam*. The company is also preparing its first launch for CDTV in the form of *Trivial Pursuit*.

Arc light

In the dark about using the Acorn Archimedes? Well Minerva training is setting up some training courses for the machine itself, and related software. Courses are available for learning about *Impressions*, *Pipedream*, *Multi-Store*, *Timetabler* and *Atelier*.

The courses are residential and can be tailored to either groups or individual needs. Each class has a maximum of six students per class.

For more information call Minerva on 0392 426160.

PC packs

Double-Jay Software, known in the 8-bit PCW and CPC markets, is moving into the realm of the PC with two financial packages.

***Cashbook II PC* is a financial analysis program aimed at single user or small business useage.**

***Bookkeeper PC* is targeted at the small business and incorporates single entry for sales and purchases, nominal ledgers, cash and bank accounts, profit and loss statements, and VAT returns.**

***Cashbook II PC* costs £49.95. *Bookkeeper* is £69.95. There is also a demonstration version costing £9.95. For more information call Double-Jay on 0209 217552.**

HP swivels

Hewlett Packard is marketing a new monochrome monitor for the PC. It comes with tilt and swivel stand and costs £273.

The company has also released the Intellifont printer driver for Windows 3. This provides many Windows applications with the same font scaling abilities as HP's LaserJet III printer family.

The company has also announced that it will be making all its Macintosh-compatible products fully supportive of the new System 7 operating system. These products include scanners, laser printers, and various software bundles.

Hewlett Packard can be contacted on 0344 369369.

Company moves manufacturing base out of the UK

AMSTRAD TO KILL UK PC PRODUCTION

Amstrad is to stop producing Amstrad PCs in the UK and Europe.

The company is instead moving its manufacturing operations to the Far East, probably Korea.

The decision was announced last Tuesday and affects its Kircaldy plant which was opened in 1988.

It has long been considered that opening the Kircaldy plant was a decision foisted upon Amstrad by the European Commission, rather than one which the company would have made itself. The reason for the EC pressure was to ensure that Amstrad had to get some of its components from within the Europe. Prior to this, the company had relied on the cheaper environment of Asia.

The move comes at the same time as lay-offs in Spain and France

The UK closure comes at the same time as lay-offs in Amstrad plants in Spain and France. The exact number of redundancies resulting from these moves is unknown as the company is refusing to reveal figures.

According to a spokesman for Amstrad, the reasoning behind the European closures is to, "maximise our profits and forgo the sentiment of manufacturing in Europe."

This move comes in a year when Amstrad has all ready laid off 37 other employees in the UK, including managing director Barry Young. March also saw a Fraud Squad investigation at the company's Brentwood headquarters in relation to a campaign of disinformation which had suggested that founder, Alan Sugar, was to sell all of his shares and resign from the company. ■

• A troubled year for Amstrad, with rumours that founder and chairman of the board Alan Sugar (above) was to resign, executive job losses and now a move away from Europe.

Alternative dimension

The latest upgrade of *Real3-D* is is to be the first new title distributed by The Soft Alternative, the new marketing division of Amiga-based video production house Alternative Image.

Version 3.1 of the popular 3-D modelling package features improved texture mapping and tendering capabilities, including eight levels of anti-aliasing to produce smooth edges on bitmapped images. It also contains more tools in the object editor and has the facility to output high resolution 24-bit images. It costs £142 for the beginner's version while the Turbo/Pro package will set you back £409.

Alternative Image, which has been using the Amiga in professional video productions for the last six years, set up the The Soft Alternative to sell graphics-related hardware and software for the Amiga. According to the company, the new division will also offer an unrivalled support service, based on the knowledge its staff has accrued from years of using Amiga products.

The Software Alternative is also distributing *The Big Alternative Scroller*, a product developed by the company itself which costs £51. Contact the company on 0533 440041. ■

• Real3-D 3.1 means that you can now create smooth, crisp three dimensional animation sequences on the Amiga.

Drawing the line at loss of quality

Avant Vector is a new art package for the ST that transforms high resolution pictures into vector drawings for import into DTP programs.

As vector graphics are constructed from lines rather than pixels, as with bitmapped images, images can be scaled up or down without any loss of resolution.

Aimed ■ professional users, the program will automatically convert images ■ PI3, PC3, IMG, BLD, PIC and PAC file formats. MAC, PC and Amiga images can also be converted from TIFF, IMG and IFF formats.

The program is available from the Atari Workshop and costs £234. Call 0753 832212. ■

Teach yourself DeluxePaint

***The DeluxePaint 3.0 Tutorial* is a video for Amiga artists who want to get the very best out of their machine's leading art package.**

It is not aimed at beginners, but those already proficient with the program. It tells you how to achieve professional-looking effects such as marbling, chrome with light bouncing off it and text in perspective. It also shows you how you can produce smoother animation effects.

Selling for £19.99, the video is the first in a proposed series from Glasgow-based Video One designed to help Amiga owners get the best out of their software. Volume One can be called on 041-552 7865/6/7. ■

• Learning how to create pictures like this with Deluxe Paint can be a bit of a chore if you have to use the manual. But now there's an alternative: the video tutorial..

A complete band at the press of button

Even the most musically illiterate ST or TT user will be able to create instant multi-layered backing tracks with *Freestyle*, according to distributor Zone Distribution.

The new £149 package automatically creates backing tracks to accompany chord sequences entered by the user via a MIDI keyboard or on screen.

The user selects a certain style – reggae, blues, rap etc – and *Freestyle* builds up a backing track in that style comprising five different samples each played through ■ separate MIDI channel.

"You don't need any musical abilities to use it, and you don't even have to physically play anything," says Mike Partridge of Zone.

There are 32 styles from which to choose and any one backing track can contain up to eight different styles. You can also generate your own styles using ■ sequencer, and load them into *Freestyle*.

The resulting tracks can be saved as standard MIDI files for import into other programs.

Zone can be contacted on 081-766 6564. ■

New dual-format tape set to give 8-bit major boost

US GOLD GOES FLIPPING MAD

US Gold has announced that its full-priced Spectrum and Amstrad CPC games are to appear in double format cassette form.

The first 'flippy' cassette, which will contain the arcade game conversion *MERCS*, will be in the shops later this month.

Though the CPC and Spectrum are to be grouped together in this way, the C64 will retain its own tape. (This makes sense: as *Express* revealed a fortnight ago, the 64 is moving towards 3.5 inch disks.)

FLIPPING MAGIC

US Gold's decision comes at a time when rumours are rife about WH Smith and Boots dropping their range of 8-bit titles.

A spokesman for Smith denied this option, telling the country's best-selling CPC magazine *Amstrad Action:* "Due to declining sales, WH Smith will be reducing the range in a number of stores, but will continue to stock the Spectrum and Amstrad software."

A spokesperson from US Gold explained: "Sales of software for both machines are not what they were a few months ago: they are definitely declining.

"So we have decided that this move is the best way to support the machines. As for the C64, we will continue to support it as well."

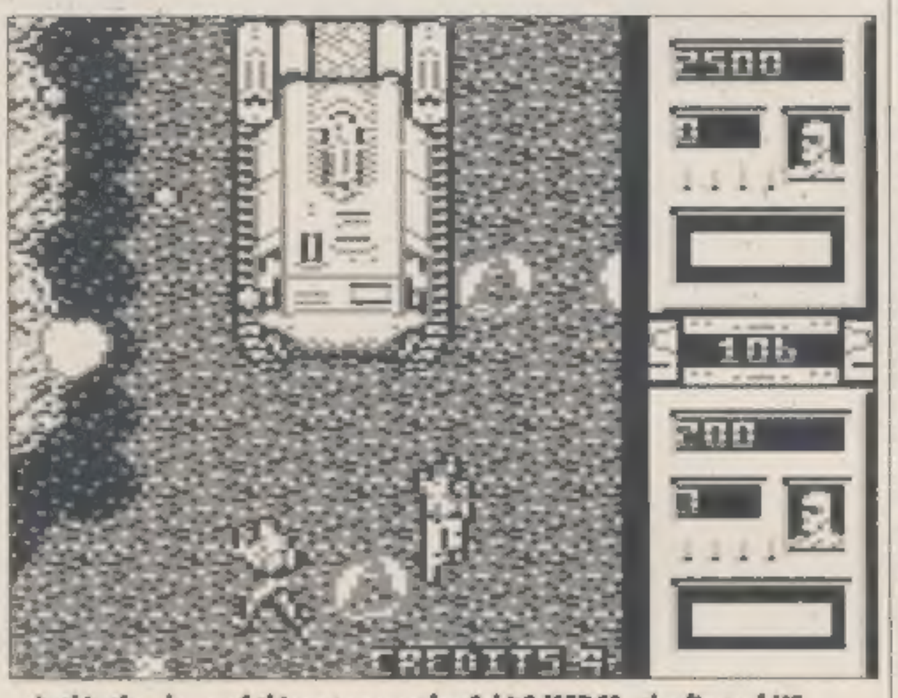
MIXED BLESSING

The flippy format has already produced a positive reaction from the games software industry, and specifically the watchdog body ELSPA (European Leisure Software Publishers Association).

The "flippy" cassette is good news for 8-bit: while it admittedly confirms the inevitable decline in software sales, it offers software houses an opportunity to cut costs and maintain software availability.

It should however be borne in mind that a similar experiment was tried, unsuccessfully, by Virgin Mastertronic.

The company's Andy Wright told *Express* that the idea was dropped because it affected chart performance: Gallup insist on regarding one cassette sale as one games sale, despite the fact it's on two distinct formats.



• Is this the shape of things to come for 8-bit? MERCS, the first of US Gold's Spectrum and CPC releases to appear on its new "flippy" format.

US Gold, however, hope to persuade ELSPA and Gallup that the chart can be adapted to recognise the "flippy" format.

As we went to press, US Gold could not confirm price for the new range of cassettes.

Ice-cold PC shifts like lightning

The world's first 50MHz 486 PC is to be launched by Lightening Computers of San Francisco.

The company claims that the Lightening 486/50, which is based on a 386MHz chip, is able to "cut compile and execution times by 50 per cent compared to 33MHz 486 machines."

The technology used to create this processor speed integrates solid state cooling module which is able to lower central processing (CPU) temperature to between 0 and four degrees Celsius. But Lightening is refusing to comment on the length of time the computer can maintain this operating speed (or indeed to explain why its name is 'Lightening' rather than 'Lightning').

The system comes with a four to 16 Mb RAM cache, and 16-bit Z280 CPU: both combine to handle disk input/output and read/write tasks in the background.

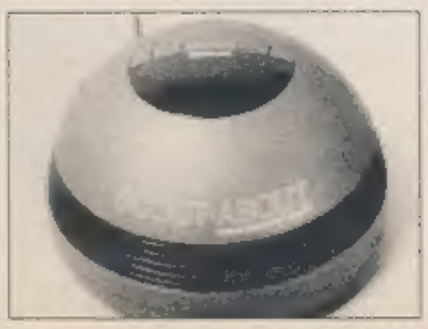
There are also three graphics adaptors included with the machine. These relate to Windows-based applications, 2D computer aided desgin (CAD) programs, and 25 million floating point operations (Mflops) adaptor for 3D modelling and 'photo-realistic rendering.'

The entry level machine costs $8,955, rising to $30,000.

The bit-bull terrier that needs oiling

Samsung has launched a home security robot. Scout-About looks more like a huge ashtray than a conventional idea of a robot. It patrols a 30 foot area around a house and grounds looking for fires, heating system failures, unexpected noises, and even intruders. If it encounters any of these problems, it phones for help.

The robot stops at random locations, waits for a bit, and then moves on. Highly sensitive collision detection is built in. So, unlike previous attempts at computer guided technology, the robot will not damage itself or the area in which it patrols. Scout-About is expected to be released worldwide – that is, everywhere else except Japan, where it's already proving a big success – early next year costing about £600.



• Overgrown ashtray lookalike Scout-About – the kind of guard that won't savage young children

PC owners get CD-I beater

NEC has demonstrated the first full motion video system for IBM and compatible PCs.

Its New Interactive Display (NID) system uses a data compression technique at a ratio of 1:1,000 to run up to 72 minutes of full-motion video at a screen resolution of 256x240.

This places it in direct competition with Intel's Digital Video Interactive (DVI) system. It also enables PC users to get better quality moving video images on their monitors than can now be achieved with CD-I or CDTV.

The NID system uses Compact Discs as its storage media, but will still run with a standard PC AT and upwards, as long as a drive is fitted.

When NEC showed a PC running the system in Chicago however, a fault had occurred in transit from Japan which disabled the green colour processing.

Consequently, the watching crowds were treated to a rather blurred and frankly bizarre view of the system's potential qualities!

CES SNIPPETS

Colour video-phone

Hitachi displayed a video telephone able to transmit full colour, full motion pictures.

While this sounds as if it is decades from commercial reality, it is in fact already on sale in Japan.

The HV-100 phone features a 5-inch TFT LCD colour display, and can both transmit and receive simultaneous colour signals.

Not surprisingly the price is high – approximately £3,500 high, in fact.

Laser sing-along

One of the themes of this year's CES was laser-disc based Karaoke. In fact a meeting of Karaoke equipment manufacturers, which includes Pioneer, was convened.

Further damage was done to the already tacky image of singing along with tired old songs when the writer of banal old cliché-ridden *My Way*, Paul Anka, 'headlined' the CES entertainments. Proceeds from the show went to the Electronic Industries Foundation, which has currently placed 10,000 disabled people in employment within the electronics industry. Gets you there, doesn't it?

DAT's not all folks

Although it has yet to make a big splash in the UK, Sony's Digital Audio Tape (DAT) is still doing the rounds in the US. CES saw several DAT-based hardware configurations, as well as DIC Digital's attempt to introduce the system to computer users.

It announced a range of DAT cassettes called Platinum Series Computer Backup (CBU) cartridges.

DIC claims that one of its 4mm CBU DATs can hold 1.3Gb of data, while the 8mm version can handle 2.3Gb – 100 times the amount which can be stored on a conventional 20Mb hard disk.

Best of Nintentions

Nintendo was not simply signing up earth-shattering deals to develop for CD-I. Neither was it just showing off the re-badged Super Famicom (now the Super NES) at CES. It was also taking out eight consecutive full pages of adverts in various trade magazines. These claimed that $200 million's worth of *Super Mario* gear have been sold. If *Super Mario Bros 3* was a film – which it is going to be, by the way – it'd be second only to ET in terms of revenue. And 12 million GameBoys have now been sold!

Atari keeps away

Atari kept a low profile at CES. It did not bother showing any of its equipment at the main halls alongside Sega, Nintendo or NEC, booking instead a hotel suite, where Lynx games were shown off. What's that you say? ST? Forget it. Some cynical observers are now claiming that Atari US wouldn't even recognise an ST if it rushed up to them in the street waving its arms and shouting "I'm an ST! I'm an ST!"

TOMORROW'S CUTTING EDGE

Far-out facts from a future that's getting increasingly nearer...

Fuzzy first for Japanese

Japanese computer manufacturer Omron aims to be the first company to release a commercial 'fuzzy logic'-based chip.

Fuzzy logic is considered by many computer experts as the first major step towards true artificial intelligence. Omron claims that the chip is capable of making 10 million calculations per second, 32,000 of which can be 'What if?' questions.

LOGIC AND LOGISTICS

The first use for the chip will be for detecting and analysing mechanical faults in machinery, and expert systems. Omron also plans to incorporate the fuzzy logic chips into its Luna series of workstations.

The logic of conventional computers is based on the binary system: every decision is answered either 'Yes' or 'No'. There are no grey areas in between. Fuzzy logic introduces an element of 'What if?' into this equation. For example, fuzzy logic can be used in an air conditioning system to control when it should be switched on or off.

Conventional computing would be programmed as follows: switch on when the temperature reaches x degrees Celsius. Switch off when it drops below y degrees.

Fuzzy logic, however, takes a number of other factors into account and weighs up their relative merits. So it might only switch on the air conditioning when the temperature reaches x degrees as long as light and humidity are also at the correct levels, and the temperature has remained constant for a certain length of time.

VALUE JUDGEMENT

This logic is currently programmed in at a software level, with a whole series of 'What if' commands. If, however, it was on a chip, developing fuzzy logic software would become less problematic. And it is clear that programs would run many times faster than if all the variables had been incorporated into the software.

This could revolutionise multitasking; a computer would be able to make fast 'Value judgements' on how to arrange data and decide the priority of tasks – such as whether to switch on the air conditioner, when would be the best time to print a page or set the microwave. ■

THE HALF A MINUTE MAG

A US company plans to publish a 300 page multimedia magazine via TV. *And the broadcast will only take 30 seconds.*

Because a single second of video contains 30 frames of data, each page will be broadcast for three successive frames. Viewers can record the whole broadcast, then watch it again using the pause button on their video recorders.

• A multimedia magazine which runs at the speed of one page for every one tenth of second. Shades of RoboCop? Subliminal ad or blipvert? You have thirty seconds to comply.

"You will need a good VCR and good television to get the most from this," explains Taylor Barcroft of Future Media. This means a video recorder with at least four recording heads.

The magazine itself will be created using high quality Desktop Publishing (DTP) and Desktop Video Production (DVP) techniques.

"We bring images captured in still frame photography into the computer to enhance the presentation using *Adobe Workshop* or other programs. You lay it out on the computer with a publishing program, just as you would a magazine, except you're thinking video," says Barcroft.

The broadcasts plan to be made during cheap rate advertising time in the middle of the night. ■

Healthy or terminal?

The European Community is to impose health and safety standards on computer terminal displays.

From next year terminals must conform to specified levels of radiation, flicker, readability and noise level.

In addition there will also be regulations covering the standard and height of the chair you sit on when using the terminal, and the type of desk on which a terminal stands. ■

• Soon the EEC will be deciding just how high your chair should be!

The credit card that knows who's boss

A credit card that electronically recognises your signature is to go on trial in High Street shops and supermarkets this autumn.

The British-made card contains a microchip that electronically scans your signature and compares it with a standard signature in its memory. It automatically takes into account the way your writing varies. But manufacturers claim it is still sensitive enough to detect even the most skilled forger.

The chip also holds details of all your accounts.

The scheme has the backing of US credit card manufacturer, the McCorquodale Corporation. And the UK High Street Banks' and Building Societies' Association for Payment Clearing also believes that electronic signature recognition is the way forward to defeat plastic fraud.

France already has the government-backed Mixte smart card, and IBM is believed to be in discussion with American Express and Visa about a similar system. ■

• Soon you'll be carrying this credit card which can recognise your signature. (No doubt the banks will find a way of charging us more for it, as usual.)

Speed surge

The computer speed record, set last March, has been smashed by a $20 million machine.

The Touchstone Delta computer can call every number in a standard phone directory – just a *hundredth of a second*. It was demonstrated by Intel at the California Institute of Technology last month, reached 8.6 gigaflops (1000 mega floating point operations per second) – an astonishing 65 per cent faster than the previous record.

A 486 PC working at an optimum level can achieve an maximum of about five megaflops, which means that the Touchstone is around 2,000 times faster than most standard office computers.

The Touchstone Delta, owned by the Concurrent Super-computing Consortium, has a parallel 528-processor system. Says CalTech scientist Roy Williams: "Parallel computers will help scientists achieve their goals more quickly.

"Traditionally scientists either worked on theories or experiments, but now there is a computer that can work out the consequences of one's scientific assumptions'" he claims. ■

Computer aided conflict

Tomorrow's troopers will march into battle armed with computers smaller than an audio cassette strapped to their helmets.

The computer, which the US Army hopes will be ready for 1995, will weigh just one pound and will have some of the advanced communications and graphics capabilities already found in planes and tanks.

It will be possible to mount it on a soldier's helmet so that he can keep one eye on the terrain, and the other on the computer's screen in order to receive commands. There will also be a microphone and a hand-held device which will act like a mouse. It will be used to help a soldier pinpoint his exact location and work out the probable position of enemy troops.

In the light of the Gulf conflict, the US Army committed $500,000 to developing the hardware with the help of Texas Instruments. "The superiority of high-tech systems was demonstrated vividly by the success of US forces in the Persian Gulf. But the average foot soldier still goes into battle with relatively low-tech weaponry," says Texas president Michael Stewart. ■

• To increase safety yet maximise kill-potential, tomorrow's Tommy will wear a head-mounted computer, microphone and mouse into battle

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WHAT'S NEW

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VGA display

PRODUCT: VGA display adaptor
NAME: VG6000
COMPATIBILITY: PC

The VG6000 comes from Taiwan-based Diamond Flower Inc. The board is a 16-bit system which supports VGA (Video Graphics Array), EGA (Enhanced Graphics Adaptor), CGA (Colour Graphics Adaptor), MDA (Monochrome Display Adaptor), and Hercules. On-board drivers are also provided to cope with Windows 3, AutoCad, GEM, Ventura, Lotus *1-2-3*, WordPerfect, and Symphony. It comes with 256K of video RAM, and 32-bit access for data transfer.

The VG6000 supports analogue and digital displays, with additional support for 132 column text display.

As an added bonus, we also have news of the £25 monochrome adaptor from the same company. This is the MG-80, which provides Hercules display mode. It comes with a UMC chipset providing resolution of 720-348 pixels.It is an 8-bit card and comes with 64K of RAM.

Price: £89.30
Availability: Now
Target users: Anyone who needs a low-cost VGA upgrade.
Contact: DFI: 081-461 3222
Silica: 081-309 1111
Perceived competition: According to the company, the only competition comes from the wholesalers.

• Low-cost VGA graphics for your PC. This board comes with Windows 3.1 support even though Windows 3.1 is yet to be released.

Working with Windows

PRODUCT: PC spreadsheet for Windows
NAME: Lotus *1-2-3*
COMPATIBILITY: PC

At long last, Lotus Corp has produced a Windows compatible version of its 'industry standard' *1-2-3* spreadsheet. Don't hold your breath though, it won't be released until "later this summer", according to a company spokesman.

This version of *1-2-3* comes with the 'Smart Icons' system. This allows users to create macros which will automate many spreadsheeting operations. There are 50 icons bundled with the system which enables the user to access file saving, text formatting, and other functions at a single click. Users are not stuck with the bundled icons – there is also the ability to create your own.

Also included is, what Lotus calls: "*1-2-3* Classic". This allows users already familiar with the spreadsheet to lose the Windows interface, and directly access the standard *1-2-3* menu system. This is achieved by pressing the '/' key. Four areas are covered: Files, Windows *1-2-3* can read and write to *Symphony*, and DOS formats. Styles: Style sheets from *Allways*, and *Impress*, are compatible Macros: macros from any version of *1-2-3* will run under this system.

Price: £475
(3.1 upgrade) £35
Preview upgrade £99
Availability: Late summer this year.
Target Users: Spreadsheet users who need or want to move away from DOS and over to Windows.
Contact: Lotus (UK)
0784 455445
Perceived competition: All other spreadsheets

20 inches of hi-res screen

PRODUCT: Hi-resolution monitor
NAME: Hitachi 20MVX
COMPATIBILITY: PC, Mac, Amiga (with flicker free upgrade)

This 20-inch monitor is full colour and is VGA compatible. It makes use of Hitachi's silica-coated flat-screen design, and comes with a tilt and swivel base.

Hi-resolution in this case means 1280X1024 on screen. Not only are the monitor's graphics capabilities strong, it can also display 160 column by 45 line documents. Connectivity is achieved by a D-sub 9-pin input.

Price: £1,595
Availability: Now
Target Users: Users of spreadsheets, desktop publishers, and presentation graphics.
Contact: Hitachi: 081-849 2092
Perceived competition: NEC

• Big and brash and full of colour: it's Hitachi's latest 20-inch high resolution monitor.

Real 3-D

PRODUCT: Realtime 3-D graphics boards
NAME: IrisVision
COMPATIBILITY: PC

• How would you like SPARC station graphics running on your humble 286 PC? You would? Well this might be the kit for you.

The IrisVision series of Realtime 3-D graphics boards transfers the same UNIX technology used in Silicon Graphics' workstations, to the PC. As the name suggests, this series of boards make use of the Iris graphics library software which has only previously been available in UNIX workstations.

The boards will allow PC owning graphic artists the opportunity to produce 3-D models which can be fully rotated and swivelled on screen. According to a spokesman for Silicon Graphics: "A PC with IrisVision will now produce better graphics than a SPARC station".

The boards all support MS-DOS, SCO Open Desktop, and Windows 3. Software developers of the standard of AutoDesk and Cadkey are already developing new software which will be compatible with IrisVision.

Price: 24-bit £4,950
8-bit £3,650
Micro Channel £4,080
Availability: Now
Target Users: Computer Aided Design (CAD), Animation, and creative graphics.
Contact: Silicon Graphics: 0734 306222
Perceived competition: According to the company: "No one has done this, to this extent, on other graphic boards".

Self stimulation

PRODUCT: Stress relief hardware
NAME: EndoStim
COMPATIBILITY: Stand alone device

One from the weird side this. The EndoStim machine sounds more like an instrument of torture than a stress relief system. Electrodes are attached to the user's ears, via what the company calls 'acupuncture points'. Through these electrodes is passed electrical current of one millionth of a volt. This current moves into the brain in order to stimulate 'neuro-chemicals'. EndoStim is tuneable to 10,000 frequencies and can be used without medical advice. The name EndoStim derives from the claim that the machine stimulates the endorphins in the brain. Endorphins are opiate-like substances which are produced by the pituitary glands as pain killers.

PRICE: An EndoStim machine costs £625. Or you can hire it at £15 for each 20 minute session.
Availability: Now
Target Users: Anyone in a stress-related environment.
Contact: London Neuro Centre: 071-284 4769
Perceived competition: None. This device is said, by the London Neuro Centre, to be unique.

Best back-up

PRODUCT: Mini-cartridge tape drive
NAME: AccuTrak
COMPATIBILITY: DOS, OS/2 and EISA PCs

• There is no need to curse your luck when a power spike, brown-out, black-out, or split cup of coffee ruins all that valuable data, as long as you have made back-ups. You have haven't you?

We are forever being told about the importance of making data backups, well these mini-cartridge tape back-ups offer data compression, extended length cartridges, and EzTape systems.

Users can power the units from their PCs, or from an additional power pack which costs £99. The power packs are auto-sensing, so they will switch from UK standard 240 volt to European and US 110 volt power supplies.

Price: 120Mb £549.
250Mb £699
Availability: Now
Target Users: Everyone needs back-up
Contact: Irwin Systems: 0734 775700
Perceived competition: None

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EXPRESS MAIL

Welcome to Britain's liveliest letters page which this week asks:

Should software houses copy the crackers and release their own compilation demos?

Or are CD-only releases the answer to piracy?

But if this is a little too serious, why not curl up next to your fave machine and get intimate?

PC Prices

I own a PC and, as I'm sure fellow PC owners will testify, the PC's games seem to be priced at least £5 more than ST or Amiga games – even when some ■ them are of inferior quality.

A good piece of software has the asking price of about £30 and if you can't afford the price it's less likely that they'll appear at a budget price; unlike the ST and Amiga versions.

I have no sympathy for illegal coplers but 'Total Wiper' raised the point that as long as games are a rip-off, people will work ■ any means to get them cheaper. I agree, I know many people who copy games because of the cost. surely something is wrong with the system particularly when so many people are copying games.

S Felix, Southall Middlesex

I CAN'T see why PC games should be £5 more than other 16-bit games other than the fact that less games sell on the PC than the ST and Amiga. Therefore it's more expensive ■ cover your costs and make anything approaching an equivalent profit. Until the PC is shipping units in the games sales stakes it's a situation that's likely to remain the same. If you think that's bad you want to take a look at the poor guys in the Mac camp!

Cracker

The war between the crackers and software houses is futile. The sooner they reach an agreement the sooner the crackers can put their superior talents to good use and show us all how games should really be written.

In the meantime, to stop more people turning to crackware why not get software houses to sell playable compilation disks (like crackers do!) containing demos of the first level ■ all their new releases. They could cost around £1.50. We could try 'em before we buy 'em.

However I suspect the main reason most software houses haven't taken up this good idea is that most know their software isn't actually worth the hefty price tags, reviewers wouldn't be able to overhype games, we'd ■ see how crap the games really were and no-one would buy them.

A Spreader

NOT A BAD IDEA at all. I agree that many games are crap and overhyped, but the real gems always stand out. Pity though that you omitted to send your name and address - I could have sent you a fiver.

Survey call

ONE OF HAYDN'S £5 WINNERS

I see that you still insist that the illegal copying of software ■ 'theft pure and simple'. IT IS NOT. It is exactly the same as taping the top twenty hits from the radio. The producer ■ the software has not strictly 'lost' any property even though he may well have lost the opportunity to make money.

Throughout your replies and comments on piracy you seem to have developed a holier than thou attitude. All you are going to do is alienate people and make them ■ the more intent on getting 'free' software. Perhaps if you ran a few more stories on software companies that have cut back on research and development, quote from those who have been put out ■ a job, statistics on piracy and so on, you might be able to 'encourage' people not to hack, or at least not to give away any software that they do hack. As far as the pirates are concerned the surely best way to ■ about is to build up trust with them so they might send you such statistics.

If you are interested I would be willing to give you a PO Box number where pirates could send statistics and I could promise them confidentiality and yourselves that I would not use any of their software or use the survey as a sort of pirates club for contacts. Legislation will never be successful and the only way forward ■ by education.

PJ Russell, Newtownards,Co Down

FIRST OFF, please go ahead and set up such ■ PO Box. That's the kind of positive response we need. But secondly, let's clarify a few things. I'm afraid software piracy is still pure and simple theft despite your protestations. 'Property' doesn't need to have been 'lost' for a theft to have occurred. Ever heard of intellectual property? You know – copyright, royalties and all that? Thanks for your letter, a fiver's on it's way to you.

GIGA-CASH MESMERIC LOOT ATTRACTION UTILITIES - PARTS 7 & 8

• Buy ■ mainframe like this at an All Formats Fair and make millions from the safety of your garage with ease

7 Here's how I've made my fortune using a computer. I bought an old 4-bit IBM mainframe for a fiver at the All Formats Fair. Getting it home on the bus was a pain, but once I'd convinced the conductor that it was a dog, he allowed it on.

I had to carry it upstairs and I was fair tweaked when I got home to Twickenham. The wife spent a weekend scooping out its entrails and we sold them to the local scrap merchant for £140. He said that he'd not seen that much copper since they phased out the halfpenny piece. So far six days gone and I was £135 in profit. A tape recorder playing a loop of sounds from *Star Trek* and the mainframe looked very high-tech in the garage. Part two ■ my brainwave began to take shape.

A local fax bureau. People bring their faxes to our front door, my daughter runs them through the duplicator, and our son delivers them on his bike, apologising and saying that they've been delivered to his firm's fax by accident.

In the three months that I've been offering this service, my only expenditure has been five gallons of raw woodgrain alchohol for the duplicator, a new back tyre for my son's bike and £4 for a page of advertising in the parish magazine. I've made loads.

Next week my brother is going on an art course, I'm buying some Sellotape and we're opening a DTP bureau

Willian Stevens, Twickenham

8 Here's a loot attractor that's actually doing the rounds at the moment as a chain letter. I've made over ■ million and retired after sending out just 16,000 letters. What did they contain? An invitation to buy any one ■ four reports which cost ■ each. One on multi-level mail order, one on mail list sources, one on major corporation sales techniques and one on multi-level sales plans. I then send out a letter to as many people as possible inviting them to send me £5 for a report. I get the fiver they get a photocopy of the report. They then do the same to people they know.

John Briggs, Edinburgh

BUT DON'T BOTHER with this one, no one else does.

ON THE COUCH

Continuing our series of psycho-analytical tips for you and your computer. Just write in with the name of your machine, your favourite software, and the machine that you'd most like to own.

Our resident psychiatrist, Dr Clare Anthony, will then lay you down on her leather couch and unearth your wildest desires. So write in for a free diagnosis to : Leather Couch Clare, New Computer Express, 30 Monmouth St, Bath BA1 2BW.

This week, it's Gordon Druce of Bath
- MACHINE OWNED: Macintosh IIx
- FAVOURITE SOFTWARE: *ResEdit*
- DESIRED MACHINE: NeXT Cube

Oh dearie, dearie me. We're dealing with a classic contradiction here Gordon. It's the inherent, and potentially fatal, disjunction between the mechanics of pleasure, as represented by the Mac, and the mechanics of power, as represented by the NeXT. ■ between is the mediator, *ResEdit*, the low-level sector editor for the Macintosh.

You have unconsciously chosen *ResEdit* as the means of resolving this dichotomy via an endless modification of your interface. And this is deeply distressing. For you know what we Freudians say about low-level sector editors, don't you Gordon? Yes, I'm afraid we're talking seriously anal here. And I don't really think these pages are the place to develop that line of reasoning further.

Indeed, the NeXt Cube is also part of the problem as it's matt black. And that can lead to problems as matt black represents an absence of form and denial of meaning. Thus your desire for a NeXT constitutes a repressed emotion forcing your unconscious to ceaselessly wash over the trials and tribulations encountered by your ego. In short it's an abjegation of meaningful, purposeful action.

DIAGNOSIS: Sell all your belongings and buy a NeXT before your fixation overcomes you. Then form a publishing empire. You will shortly realise that spreadsheets possess a greater anal fascination than sector editors.

Coded reply

Having read many a letter in this column over the weeks about piracy I wonder how many pirates realise how stressful it is for programmers like myself ■ find work ruined by pirates.

I believe "cracking" software, stealing routines and spreading or selling this software is just for the low-life scum of the human race. What do they gain? Comments like "it's a challenge" or "it's not worth the money" are irrelevant. If they want a challenge, write a game that beats a Bullfrog production and sell it cheap, then there will be no moaning about price.

When I read the letter by The Alien of the Pompey Pirates suggesting that they had done good things to the industry, I had to scream "what like!? Robbing programmers ■ their livelihood?" I'm sure programmers would prefer no piracy instead ■ the availability of a file packer!

Lastly Mr Fereday in *Express* 134, may say that CD technology can be copied, but disk transfer would ■ a joke, and the equipment needed to copy to CD would be expensive cutting out all the back room pirates, reducing piracy to a minimum.

Ultimately, piracy is immoral and is theft whichever way you look at it

Jonathan Barnes, via Aspects BB

More dolphins

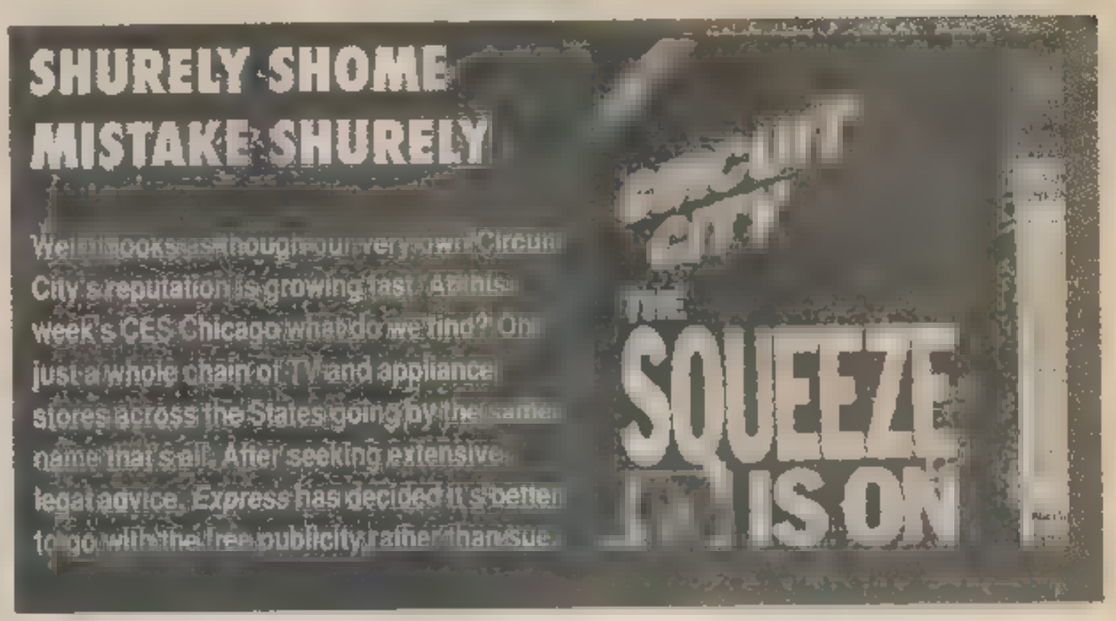
Your answer ■ 'Dolphin Love' in *Express* 133 surprised me. You did not warn readers contemplating sex with their computers not to attempt such without an interface given the current virus epidemic!

DGW Griffith London

So close!

Re: Your request for readers thoughts on sex with computers – there are quite few things in common actually :
1) Intimate use of the fingers.
2) You know exactly where everything is.
3) If you're an expert, everyone asks advice.
4) You'd spend all your spare time doing it if you were allowed to.
5) It's very tiring.
6) You can do it with a small, medium or large model...
7) If you're not attached to it you can upgrade at any time.
8) It's hard to concentrate on the job when *Twin Peaks* is on.
9) It's offputting when people are watching.
10) You can buy magazines dedicated to it.

Steve Browne, Kingston Surrey



Yuppie Love

M.Jones in *Express* 134 and all the rest ■ the computer yuppies really should take their heads out of the clouds in their continous criticism and moaning about 8-bit computers. They're simply being led by their noses in the age old philosophy of planned obsolescence. To follow the logic of their twisted thinking, everyone should dump their Minis and Escorts and buy a Ferrari just because it's bigger and faster.

Ron James, Ribbleton Lancs

RON RON, consider this. What if buying a Ferrari meant that you were then entitled to drive on fast roads with great scenery rather than on urban freeways in traffic jams? I guess you'd then try and save for a Ferrari, yes? Thankfully the price differential between a 8-bit and 16-■ isn't as great as in the car market, but the road analogy is still the same.

Or is it readers? Why not tell me what you think by dropping a letter ■ 'Mine's smaller, but so what' NCE, 30 Monmouth St, Bath BA1 2BW.

Remote sex

CDTV's even better. You can do it from the other side of the room

Jim Hawkins via CIX

Hot parts

I had sex with a Princess once – I kept burning myself on the exhaust pipe, though!

Dave Winder, Sutton,Surrey

Chips galore

Re: your request for information on the domestic gadget with the most chips. It's the VCR. Individual microprocessors look after the timer, clock, channel tuning, control buttons, remote and tape transport. Tape-end, condensation, record-protect, capstan and video-drum servos are also controlled via decidated chips with on-board RAM or EEPROM memory as well as a program in ROM.

Dave Henniker, Edinburgh, Scotland

Mac overkill

I am now a subscriber to your magazine, but I have one small complaint. The Macintosh. Yes it may be a good computer, but so is the Archimedes but it doesn't get a two page special every time there's a snippet of news like with the Mac. I know you use Macs ■ make *Express* but it's a bit much.

Glenn Cameron Leics

THE REASON'S SIMPLE and more than just the fact that we ■ use Macs on *Express*. There's much more stuff comes out for the Mac than the Arc, it's more exciting and it's a more advanced system - but please note I used the word 'system' and not 'machine'. Okay? ■

Write Now

Write and tell Haydn Fitz-Williams what you think! Reach him at *Express Mail, 30 Monmouth Street, Bath BA1 2BW*. Sorry ■ no personal replies, even with an SAE and remember only SOME letters win a liver!

On-line mail

Own a modem? Then squirt us a letter. *Express* has its own area on Aspects bulletin board (061 792 0260) where you can leave mail and upload/download files.
We also have our own conference on CIX. Why not give this on-line service a ring on 081-390 1244 and talk to us direct!
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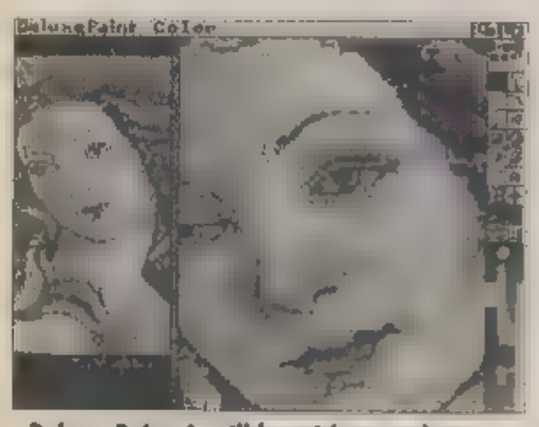
AMIGA

- **DeluxePaint 4 is ready to astonish Amiga artists**
- **HiSoft launches new range of tools for programmers**
- **Learn piano with MindScape's new teaching system**

DELUXEPAINT 4 IS HERE!



• **Deluxe Paint 4 will be with us real soon.**

You read it here first about six months ago, but little has been heard of it since... until now.

Yes folks, *DeluxePaint 4* is very much alive and kicking. Even better, it will be with us within the next couple of weeks. I can hardly wait!

Electronic Arts has been hard at work on version four of the Amiga's premier paint system for over a year now, putting in new features and improving existing ones in an attempt to maintain *DeluxePaint*'s position as the number one Amiga paint program.

However, the program has not been developed by Daniel Silva, the man responsible for the previous three versions. After the release of *DeluxePaint 3*, Dan moved on from Electronic Arts to work for PC software vendor AutoDesk.

Despite this sad loss, *DeluxePaint 4* still promises to be a real corker. Although Electronic Arts is keeping very quiet about specific details, certain facts are known.

For starters, the user interface has been updated to bring it in line with version two of Workbench. As a result, many of the requesters now feature the bass-relief effect of Workbench 2.0. That's not to say that existing *DeluxePaint* users are going to feel lost. Far from it; the familiar vertical icon strip remains, as do many of the requesters.

It seems almost certain that *DeluxePaint 4* is now fully compatible with the extra features that the A3000 has to offer including support for the new ECS screen modes and possibly even A-Rexx. Although Electronic Arts has yet to confirm these features, the company would be making a grave mistake if either were to be omitted.

Probably the most important new feature is the inclusion of full support for the Amiga's HAM mode, something that *DeluxePaint* author Dan Silva insisted would never happen. Users have been crying out for it for years now, but it's taken over four years for Electronic Arts to take note.

Thankfully, the wait is almost over and you will soon be able to paint with all 4096 colours on-screen at once. This feature alone could spell the end for an awful lot of the competition. Many paint systems have sold on the strength of HAM-support alone, so I can see *DeluxePaint*'s domination becoming total.

MicroIllusions is supposed to be releasing a new version of its popular *Photon Paint* system which supposedly supports all Amiga screen modes. But even this will be in for one hell of an uphill struggle if it is to survive the *DeluxePaint* onslaught.

DeluxePaint's animation facilities have also been improved beyond recognition. The most interesting among these is its new 'LightBox' facility which is very similar to the onion skin system found with Entertainment International's Disney Animation Studio.

It allows you to view the previous few frames of an animation, therefore making the process of drawing successive frames considerably easier.

Another handy new feature is called 'Metamorph'. It lets you change from one brush to another in mid-stroke and handles the hard work of generating the transitional frames in between. This is nothing new to polygon-based animation systems, but *DeluxePaint* is the first package to offer this feature for bitmapped graphics.

Animation control has also been made considerably easier with a VTR-like control panel. Looking very similar to SuperBase's *VTRcontrols*, the control panel allows you to flick through animations with ease.

One of the most exciting new paint features is the 'Anti-alias' option which will automatically smooth out the jaggies when drawing lines, curves and circles giving the impression of much higher resolution images.

You can expect a full review of *DeluxePaint 4* within the pages of *Express* real soon.

☎ In the meantime, you can find out more by phoning Electronic Arts on 0753 49442.

HISOFT ON A NEW HIGH

HiSoft has been strangely quiet on the Amiga front for over a year now, but the silence is about to be broken with the release of several major new and upgraded products to further enhance its already impressive range of programming tools for the Amiga.

First up are major upgrades to both HiSoft's *DevPac* assembler system and its excellent AmigaBASIC-compatible development system, *HiSoft BASIC*.

Originally written by Andy Pennel, HiSoft's new programmer Keith Wilson is currently in the process of rewriting both programs to make them both faster and easier to use. Each will include HiSoft's spanking new source code editor, which

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is a sophisticated multi-window affair with powerful block operations, faster search and replace, bookmarks and improved gadgets.

Improvements to the languages include faster compilation and assembly times, more optimisation, new libraries and a much improved linker.

Devpac 3 will also include a brand new debugger which takes over where the original *MonAM* left off. HiSoft claims that this new debugger is so good that it is worth the upgrade price in itself!

Many of the features of HiSoft's Extend library have now been built into the HiSoft BASIC language, so it is now possible to easily access many features of the Amiga including loading and saving of IFF images (including HAM), playing of digitised sounds, requesters and a lot more besides.

Also new from HiSoft is *Inspiration*, an indispensable utility for creating graphical user interfaces for inclusion within your own programs. From what I can make of it, *Inspiration* (isn't that the name of an Archie DTP program?) is very similar to INOVAtronics' *PowerWindows* system, although HiSoft's program goes somewhat further than that rather limited tool.

For starters, *Inspiration* does not just produce source code. Instead, it actually outputs object modules which can be linked (using just about any Metacomco-compatible linker) with any language including C, Assembler, Modula 2 and even compiled BASIC.

Inspiration will generate code for commonly used Intuition structures including screens, windows, menus, gadgets and requesters. Everything is done through a nice icon-driven user interface, so it should be easy to use.

HiSoft also has a number of new products for C programmers, but I'll keep you waiting until next week for details of these.

☎ HiSoft can be contacted on 0525 718181.

Jason Holborn

LEARNING HOW TO TICKLE THE OLD IVORIES

If you've ever wanted to tickle the ivories like Richard Clayderman or Les Dawson (?), then MindScape's new *Miracle* piano teacher is for you.

Originally launched last year on the Nintendo games system, *Miracle* is a complete piano teaching system that combines software, books and even a keyboard within a single package.

Using an artificially intelligent teaching system, *Miracle* can automatically detect what level of proficiency the student has reached and adjust its teaching accordingly.

No firm release date or price have been set as yet, but budding concert pianists should keep an eye out it in a couple of months.

PC

- **Apple/Microsoft GUI dispute reaches new depths**
- **Turn your PS/2 into a snazzy multimedia machine**
- **Sierra's *Leisure Suit Larry 1* goes technicolour**

IBM GOES MULTIMEDIA

IBM expects to release a whole range of multimedia products this year, including some extensions to OS/2.

Included in the release schedule are two upgrade kits that turn PS/2 desktop computers into multimedia machines, a video digitising board, a 3.5-inch read/write optical drive and a voice recognition system.

Like Microsoft's multimedia extensions to Windows 3.0, IBM's multimedia extensions to OS/2 will let users incorporate sound, animation, and video into applications.

The extensions for Windows are due in June, while the OS/2 products will ship this Autumn.

IBM has also developed a touch-sensitive display built into an 8515 monitor. When more news of this arrives expect to see details it in this column first.

EXTENDED LIBRARY

Asymetrix is certainly in the thick of it at the moment. It recently announced that a new version of *ToolBook*, to be released at the end of the year, will let users build NewWave applications.

The program will not completely support Hewlett-Packard NewWave but will let users record Agent tasks that include *ToolBook* applications, and vice versa.

PRIVATE INVESTIGATIONS

Those awfully nice floppy disk people at Dysan have launched *Interrogator Plus*, a menu-driven program designed as a preventative maintenance tool for floppy disk drives.

The program runs in two modes, manual and automatic. In automatic mode, selected tests are run and the results displayed on the screen. During manual mode, adjustments can be made to the drive.

This utility is not for the novice but aimed at the professional who wishes to test a drive without dismembering it.

However, Dysan has a new product for the non-technical among us. Called *Investigator Plus* and it allows you to practice preventative medicine without

Continued on next page ➤

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BRANDED A VIRGIN

Euromagnetics has announced that it is to market a range of office supplies under the Virgin brand name.

A nationwide distribution channel has been established and dealers are being sought. The new Virgin supplies include open reel magnetic tapes, data cartridges, and high capacity (4Mb) 3.5 inch floppies.

Following Virgin's hip-and-trendy image is the launch of Virgin Kolorbox, a range of snazzy 3.5 inch floppies with a "distinctive multicolour shell".

Can we stand all of this excitement, I ask myself?

BITCHY, BITCHY

Apple has started to put the boot in regarding its (over) long dispute with Microsoft regarding the question of the "look and feel" GUI court case.

According to Apple, Microsoft used "lies and threats" to force Apple to sign a 1985 licensing agreement which lead to the development of Windows. Apple claims that Windows now too closely resembles its Macintosh front end.

Apple has now decided to expand the 1988 complaint against Microsoft and Hewlett-Packard, asking that its 1985 licensing agreement with Microsoft be declared invalid. The Microsoft reaction to this?

"They're desperate," declared a lawyer for the company.

TECHNICOLOUR LARRY

He's back and in 256 colours!

Sierra's ultra-successful animated adventure game, *Leisure Suit Larry in the Land of the Lounge Lizards* – the first of a blockbusting series – has been re-engineered.

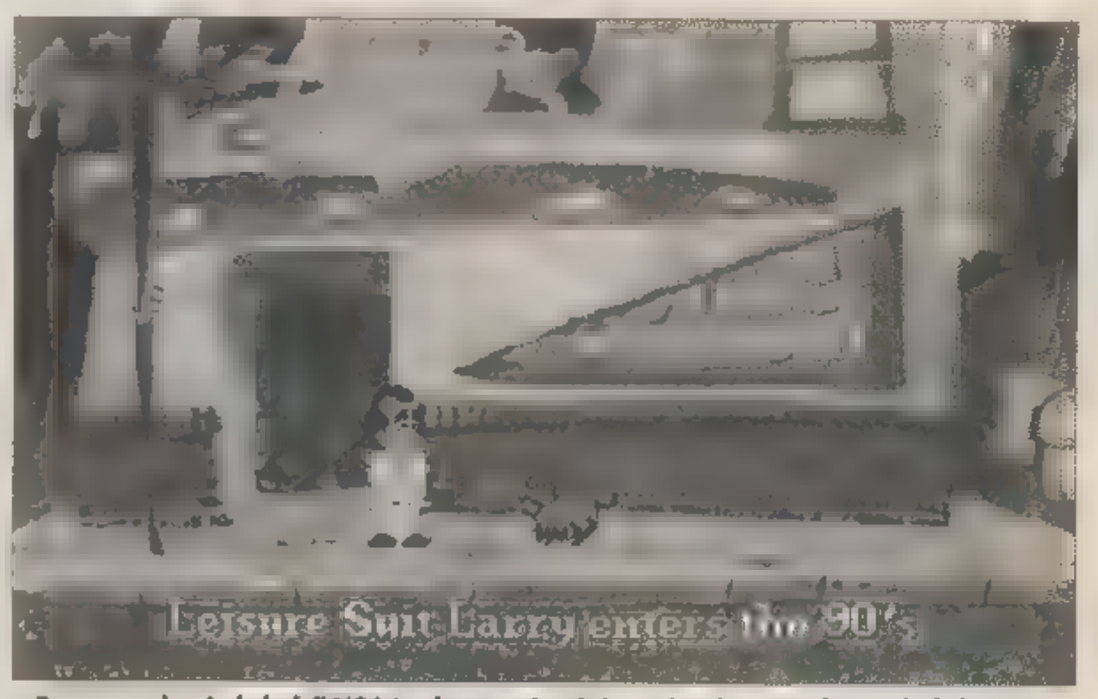
Gone are the days of blocky characters, jerky animation and head-scratching parsers.

Larry 1 has been re-mastered to include full VGA implementation, full sound board support plus the new point-and-click interface.

To accommodate the latter, Sierra has slightly altered some of the puzzles. The revamped game is due for release some time later this month.

☎ You can get hold of Sierra on the other end of 0734 303322.

Paul Rigby



• Remastered to include full VGA implementation, **Leisure Suit Larry in the Land of the Lounge lizards is now more of a case of Larry and his technicolour dreamcoat.**

SPECIALISED DESKTOP PUBLISHING SHAREWARE PART THREE

Yes folks, it's that time in the column when we sit 'round the campfire, toast a few spuds and chat about Shareware. Part three in the DTP Shareware round-up:

- ***PSX 2.00*** **is a menu driven PostScript soft font downloader with support for Type 1, the upcoming Type 3 and Bitstream QEM fonts. The PSX highlights include menu selectable PostScript soft font downloading, print font samples or device information reports with printer configuration and font directory, plus the ability to print to LPT1, LPT2, LPT3 or file. Good eh?**
- ***P4PS,*** **on the other hand, allows you to print four virtual pages (with drop shadows) on each side of a physical sheet of paper on any PostScript printer. You can prints multiple files, multiple copies, select page ranges, truncate or wrap long lines, include optional line numbers and network support.**

Additionally, a powerful macro feature allows customisation of headings and date/time formats. Finally, self-cloning allows full customisation.

- ***TSR Download*** **is a memory resident (7K) soft font manager. It offers font compression and decompression for LaserJet fonts, saving up to 90 per cent on disk space.**

Fonts are displayed in english with a point and shoot interface. You are able download or select fonts from within an application. Also, it remembers the fonts in your printer and their RAM requirement!

When you run this program it runs as a DOS application under Windows 3.0 with its own icon.

☎ Contact: PD & Shareware Library, Winscombe House, Beacon Road., Crowborough, East Sussex TN6 1UL. Tel: 0892 663298

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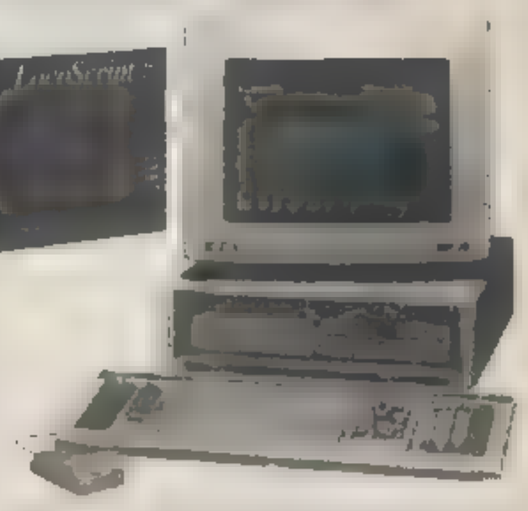

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ON-LINE HELP

There's little doubt that the very best communications packages available for the ST exist in the public domain.

My favourite is *Vanterm*, a fully-featured shareware program which includes a dial directory and X, Y and Z modem files to download software from bulletin boards and on-line services. It's available from all good PD libraries.

Recently, however, a decent commercial comms package has come to my attention. *STalker* is an American program which goes a long way toward making life easier for the on-line fan.

STalker makes full use of the GEM interface, which means that you can keep all your desk accessories running at the same time. However its most powerful feature is the ability to 'background' tasks so, for example, you can get on with other stuff while it's downloading a file.

The program includes VT52 and VT100 emulation, a 20 entry dial directory and phone dialer, auto-logon facilities, a scroll-back buffer and X, Y and Z modem protocols.

STalker costs $32 and is available from Strata Software, 94 Rowe Drive, Kanata, Ontario, Canada K2L 3YG.
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SOUND SAMPLES

If you own, or intend to buy, an AVR Pro-series sampler then you'll be interested in a new company dealing in professional samples for these them.

Premier Music Services specialises in supplying high quality samples. Everything from Acid house synth sounds, to Steinway Grand piano samples are available in either 32KHz or 22KHz formats at a cost of £7 a disk.

Complete drum kits, which can be loaded into the sequencer's *Drumbeat* program, are available and include an indian kit, a heavy metal kit and a TR808 kit. Fairlights, PPG Waveterms and DX7s all receive the sample treatment, as does the human voice.
☎ Phone 0703 260485 or write to PMS at 18 Foyle Road, Chandlers Ford, Eastleigh, Hants SO5 3QP.

BYE BYE PANTHER

On last week in *Express*'s news pages we were the first to report the untimely demise of Atari's proposed new console, the Panther.

The company says that it decided to abandon further development on the machine to concentrate on an even better one, the Jaguar.

The technical specification of the machine is being kept very quiet, but it seems fairly likely that there'll be a good deal of ST hardware hidden away inside the case.

If Atari manages to get this new wonder console out at the right price, then we'll start seeing some wonderful new games appearing on our own, dearly beloved ST.

It's interesting to note, that the software for the new console will primarily be developed by British programmers. This is at the behest of Sam Tramiel himself.

It'd be nice if those same programmers ported their efforts over

Continued on page 22 ➤

SOUL II SOUL PRODUCE THIRD LP ON ST

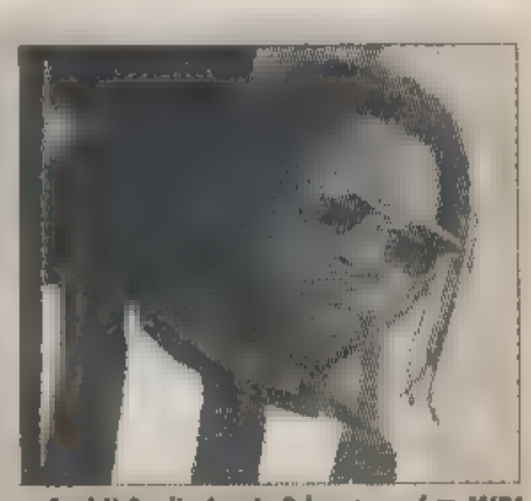
It's difficult to imagine a more successful club/dance group than Soul II Soul, so it was with some pleasure that I recently learned that the band are producing their third album on an ST.

Will Mowat is extremely well known throughout the music industry for his wide-ranging knowledge of MIDI music. This was the reason that Jazzie B, the main man in Soul II Soul, picked up on Will to co-write the new album.

A 4Mb Stacy forms the centre of the MIDI set-up. Will runs C-Lab's ever popular Notator software on it, and this controls an impressive array of synthesisers, sequencers and drum machines.

In fact, he revealed that all of the songs are written on Stacy and then the appropriate equipment plugged into the MIDI chain to make the music.

If everything goes according to plan, then the third album will be out in the autumn. Will promises that there will be something on it for everyone, so check the equipment list on the sleeve notes, and read the word ST.



• Soul II Soul's Jazzie B has turned to MIDI maestro, Will Mowat, to help write the group's next album.

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onto the ST, or even programmed them on the ST in the first place. Virtual Reality anyone?

ST PD

• Esion STE is a demo of a package commercially available next month it allows you to play four samples simultaneously.

STE users will be pleased to hear of two new public domain demos which make extensive use of that sexy DMA chip nestling inside the tan casing.

The *3-D Stereo Sound* demo, from Jennix PD, disk number DST290 is a nice sampling affair. If you plug your hi-fi into the two stereo sockets onto the back of the computer, you'll be able to experience spacial sound, of the type debuted on *Tomorrow's World* three months ago. It's really rather spesh.

Esion STE soundtracker is a sample song player. It's a demo of a package which will be released commercially within the next month. The program allows you to play up to four samples simultaneously to create harmonic tunes.

As the DMA chip has been taken into account, you can tweak the left, right or master volumes as well as changing the bass and treble of each sample. What's more a couple of nifty equalisers show you exactly what your samples look like.

It's available from Jennix PD, Disk number DST226.

Hands up who remembers *Boulderdash*. OK, three brownie points and a soggy bacon sandwich to all you old hands. This nifty puzzle game is now available on the ST and a corker of a game it is too.

The idea is to collect crystals from a maze, while simultaneously avoiding the large boulders which hover precariously above your head. It's highly enjoyable and well worth £3 of anyone's money. Try Sphinx software, disk BU65 for your very own copy.

AND FINALLY

And finally a little cheat for you frustrated gamesters out there.

If *Infestation* from Psygnosis has got the better of you, then try typing in 'I AM NOT A CHEAT', then press <undo>, then <help> and last of all <escape>.

When you restart the game you'll have the elevator card, the screwdriver, the datalink/compass, the quarters keys and the scanner.

Oh, and try pressing <escape> again for a little treat.

Bye for now, and remember: no ST, no comment.

Andy Hutchinson

Andrew Hutchinson is news editor on ST Format. *The new issue is out this week.*

CPC

- **Excellent 3.5-inch disk/software offer from Siren**
- **Turbosoft translates *Iron Lord* into English!**
- **Cult adventure game hero *Lone Wolf* limps onto CPC**

SIREN'S SOLUTION

We haven't heard much from Siren Software lately (my spies tell me that the company is homing in on the Amiga market these days) but it still has some bargains to tempt CPC owners.

One of the most popular additions to CPCs is a second external disk drive. Now you can either go for the 'official' 3-inch Amstrad drive, the FD-1, or you can opt for a 3.5-inch unit. This has the advantage of offering you cheaper disks and much more storage capacity.

One of the disadvantages of using 3.5-inch disks is that they won't store commercially-produced software – this always comes on tape or 3-inch disk. However, most people would use an external drive for saving data and text files, and for this the format is ideal.

The other problem is that to get the most out of a 3.5-inch drive you need a special disk operating system. The Amstrad's can only format disks to a maximum of 180K or so. It can still be used to format 3.5-inch disks, but you won't get the full benefit of the larger format.

Siren Software's latest solution is to bundle the special disk operating system ROMDOS with its 3.5-inch drives. ROMDOS is ROM-based (makes sense, doesn't it?) and is "totally transparent to the user". It allows you to format 3.5-inch disks to a massive 800K.

Siren's whole package costs

IRON LORD TRANSLATED

Don't mention *Iron Lord*! I liked this epic French adventure/role-playing game so much when I saw the French version that I insisted that everyone should rush out and buy it immediately. That proved a bit difficult because Ubi Soft decided not to translate it for the UK.

But all is not lost. Enterprising mail order specialist Turbosoft has elected to get the game translated into English and to market it exclusively in the UK.

☎ Turbosoft is on 0525 377974.

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Normally that little lot would set you back £160, so if you want to upgrade to an external 3.5-inch drive, Siren's "Complete Solution" is very good value right now.

- Owners of 6128 Plus machines should note that although the disk drive will work with their machines, ROMDOS will not.

☎ Siren's number is 061 724 7572, or you can write to: Siren Software, Wilton House, Bury Road, Radcliffe, Manchester M26 9UR.

CRACKING COMPILATIONS

There's a couple of really promising compilations coming up from Ubi Soft this summer. For a start, the *Ultimate Collection* will consist of six (OK, five) really good games from the past year.

Skate Wars is a fun one or two-player futuristic ice skating game with detailed graphics and good animation. There's only one man and a goalie in each team, but a variety of pitches. The danger comes as much from the scenery as your opponent!

Pro Tennis Tour makes up for good but not great tennis simulation with brilliant graphics.

Stunt Car Racer, originally from Micro Style, is like a cross between stock car racing and riding on a big dipper. Minimal graphics but maximum thrills.

AMC is a scrolling shoot-em-up from Dinamic. As usual for Dinamic, the graphics are excellent, and the gameplay tough.

After the War is another Dinamic horizontal scroller. Tough? You bet.

Zombi is last, and by all means least. Ubi Soft released this arcade adventure to widespread indifference absolutely yonks ago. Still, you can't have everything.

The other Ubi Soft compilation soon to appear is *Six Appeal*. Again, there are six games:

Rick Dangerous is an absolutely superb platform/exploration/puzzle game first put out by Microprose a couple of years ago.

P-47 Thunderbolt is another Microprose game. It takes a bit of artistic licence to have a WWII P-47 being attacked by SAMs, but once you've seen the graphics you could forgive little things like that.

Twin World is clever, cute, and not a little bit challenging.

Pick 'n' Pile is a clever puzzle game where you have to be as quick as you're smart.

Puffy's Saga is almost a Gauntlet clone. It's cute, but it's also very good.

Satan is another Dinamic scroller. As usual, the graphics are great and the game is tough. Dinamic doesn't branch out much, but then it doesn't need to when it can turn out consistently solid games like this.

The Ultimate Collection and *Six Appeal* will be coming out soon now. Watch out for them, because you won't often get compilations containing so many damned good games!

LONE WOLF

I didn't know this, but apparently this *Lone Wolf* fellow has made a bit of name for himself in the role-playing world. For one thing, he's the star in a series of books by American author Joe Dever.

These books aren't written in the ordinary way. Instead, they're composed like a series of multiple-choice questions. The whole development of the story is governed by which out of a number of options you select at different stages in the book. Now there's a novel idea. ('Novel' idea – get it?)

Well now Audiogenic has taken the idea and turned it into a computer game. The company is selling the game along with one of the books as a kind of role-playing package... Fine, I thought, that's different. Let's give it a go.

Yuk! The book's OK if you like that sort of thing (well, it must be, because I'm told it has a cult following) but the game itself is awful.

It's really just a platform exploration game with a fair bit of hacking and slashing thrown in. In theory you have to go round collecting seven bits of a shattered mirror. In practice you have to

• During the combat sequence of **Lone Wolf** *the enemy can use magic on you, so beware!*

have the patience to bumble round loads of dull screens with duff graphics and dodgey control.

The worst thing is the animation, which is jerky, slow and ultimately very irritating. Equally irritating, though, is the fact that ladders have to be climbed with the joystick pointed firmly upwards. Even suggest a diagonal tilt, and your character will take a sideways step, plunging right back down to the bottom of the ladder again.

The combat sequences are a bit better. You're still stuck with an arthritic sprite, but you do have quite a range of fighting moves and you can also use your magic skills.

Lone Wolf the game appears to give you a lot for your money, what with the book thrown in, but the game is irritating and duff-looking, and really isn't worth shelling out for. Sad, but true.

Rod Lawton

Rod Lawton is editor of Amstrad Action, *the leading magazine for the CPC. The next issue is due out on 20 June.*

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C64

- **Was the first C64 art package in years worth the wait?**
- ***Judgement Day* for Ocean set for early next year**
- **Cheap cyber-classic as *Hawkeye* returns on budget**

PAINTING A BLEAK PICTURE

You may recall the mention of *Saracen Paint* in *Express* 131, and now the package has arrived. A straightforward bitmap picture creator/editor, it comes on cassette or disk (both versions have several accompanying sample pictures).

On loading, mouse or joystick control can be selected, although which mouse I'm not quite certain – I tried three, and none of them worked with it.

The whole caboodle is accessed from one screen, over which is the menu/status area where options and colours are selected. The menus are standard 'pop down' ones, and there are four main headings: FILE, DRAW, ZOOM, and OTHER – it's all quite logical.

FILE is concerned with the loading/saving side of things. Pictures can be loaded or saved using tape or disk and there is also a format disk option (for the less organised).

DRAW contains all of the main drawing options. PAINT allows existing on-screen colours to be changed, LINE allows lines to be drawn, DRAW is freehand drawing, BOX and BOX FILL is concerned with filled or outlined boxes (similar to this is ELLIPSE and ELLIPSE FILL), and FILL allows any area be flooded with a particular colour.

The ZOOM section is fairly comprehensive, and is divided into two parts; BYTE magnifies a byte of the picture (ie one character square) to enable precise pixel editing.

The bog-standard ZOOM magnifies a small portion of the screen and blows it up to full screen size – this allows much more editing space than the byte zoom.

Finally, there is the OTHER menu, which contains the following; LOOK (which displays the entire picture), CLEAR (to clear the screen), COPY (parts of the picture can be picked up and placed elsewhere), INVERT (a selected area can be flipped horizontally or vertically), and FONTS (text can be typed directly on to the screen using any of the four styles).

Saracen Paint is the first new art utility to surface on the C64 in the last four years, but quite frankly fails to improve on *any* other graphics package.

I would have expected a lot more than the simple drawing features on offer, and the presentation leaves much to be desired. The control method is cumbersome, and the pointer moves awkwardly around – menus can be an absolute pain.

Admittedly the zoom functions are good, but the rest of the package fails to impress (as does the appallingly sluggish disk loading). The pictures included barely illustrate the graphic potential of the host machine. In fact most of them are abysmal.

A *very* disappointing release, especially as a software house really needs to make an impact in its first year or two.

EYES LIKE A HAWK

Silly old me; the cheat mode for this was printed a couple of issues ago,and I hadn't even reviewed the game – so here we go.

First, I'll attempt to describe the rather convoluted storyline: a 'perfect' race of people, the Xamoxians, were attacked by a jealous race of tyrants, the Skryksis. There were survivors,and they lived in underground chambers (mainly because the atmosphere had been screwed up by the war).

So the Synthetic Life Form known as Hawkeye was created. Being a cyborg it can survive in the hostile environment.

In the game you play Hawkeye and you must battle through 12 sectors to ultimately save your race. Hawkeye has the power; can you control it? Well, yes and all you need is a joystick.

Gameplay takes place on a horizontally scrolling level. You can move about the landscape with relative freedom, aside from the dozens of nasties that roam the platforms.

These can be disposed of using one of the four available weapons; hand gun, machine gun, laser and rocket launcher. Ammunition for these weapons must be

OCEAN SNAPS UP LICENCE FOR TERMINATOR II

One film set to do very big business this Christmas is *Terminator II: Judgement Day*. Arnold Mr Schwarzenegger plays the good guy this time, protecting Sarah Connor and her son from a rampaging cyborg.

Much of the original production team has worked on the sequel, and the special effects have been masterfully crafted by Industrial Light and Magic (the best in the business, methinks).

Ocean has snapped up the licence, which no doubt cost an arm and a leg, and the game should be out early next year.

Meanwhile, we can look forward to one of Ocean's other licence-scoops... *The Simpsons*. I probably don't need to tell you about this rather strange family, so I won't.

Arc Developments, the team behind the very impressive *Predator 2*, is tackling the C64 version, so it should be good.

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• Hawkeye bursts onto the C64 once more, with beautiful graphics, wonderful music and amazing parallax scrolling.

collected, except for the hand gun which has unlimited ammo.

To complete a level, four icons (or puzzle pieces) must be collected. There are other collectables too, including ammunition, extra lives and mystery icons.

Hawkeye is simply a brilliant game, with the astounding parallax scrolling being just one blob of icing on an already tasty cake. The variety in both the backdrops and the aliens is imaginative, but you rarely have a chance to stop and admire the view!

Playability can be a tad repetitive, but the game is always entertaining, and the 'clever' multi-load relieves any boredom. Graphics are colourful and well animated, if a little shabby in places, and the music (courtesy of Jeroen Tel) is simply splendid.

A great shoot-'em-up, and a corking budget game to boot. *Hawkeye* is out now on the KIXX label, and it will set you back just £2.99.

Andrew Roberts

SPECTRUM

- **Classic-style blast-'em-up to tide the summer over**
- **How to take the pain out of poking on a multiface**
- **Whatever happened to the end of *North and South*?**

GOOD OLD FASHIONED FUN

One glimmer of game playing hope in a summer devoid of new releases is *MERCS* from US Gold.

This looks set to offer an enjoyably violent time sure to banish those gameless blues. *MERCS* is a running and shooting game with lots of weapons, levels and death but not much in the way of peace, flower arranging or originality.

There's a simultaneous two player option which means you and friend can traverse the scrolling screens together, killing enemy forces and taking on the by now traditional end of level nasty.

It's not going to be anything stunningly original, but it should tide you through those long, wet, cold summer months.

MERCS should be in the shops now and costs £10.99.

BEAT THE TYPING BLUES

Are you the lucky owner of Multiface who's sick of having to tiresomely type in interminably long pokes because no short and snappy alternative is given for your piece of kit?

Well, help is at hand from one of our oldest pals, Jon Rose, who's sent in an excellent tip that tells you how to go about extracting Multiface pokes from listings that don't have them.

"The trick," says John, "is to find a bit which says either '`175, 50, xxx, xxx`' or '`62, 50, x, xxx,xxx`'.

"In the first example, multiply the last number by 256 and add it to the first number. Then poke this address with .

"For instance, if you had the sequence '`175, 50, 0, 128`', you would poke `32768` with `0 - 128 * 256 + 0 = 32768`.

In the second example, you do the same with the third and fourth numbers in the sequence, but this time poke the address with what follows the '`50`'. For example, if you had sequence which ran

continued on next page ➤

NOT A HAPPY ENDING

Mark Harris has written in with a shock horror warning about Infogram's strategy game *North and South*. Take it away Mark...

"The other day I bought *North and South*. Nothing horrific about that, I hear you say. But have you seen the tape version? The multi-load is the worst ever.

"Now the shocking bit. At the end of game the victory message block has been left off the tape! I know this for a fact because I transferred the game to disk and couldn't find it anywhere. The public should be warned!...

"Just to make matters worse, *North and South* is probably the most fun game I've played in years! Sick init?"

It is indeed. There are, in my opinion, few things quite as annoying as playing a game to death for years, finally struggling bravely through to the end only to receive a message along the lines of, "Well done, you have killed the evil ARTXXERYXS/Found the treasure/Won the FA Cup." etc.

We deserve better and with the huge teams of game designers apparently producing games right down to the finest detail it's about time we received it.

If you have any comments on the subject of end-of-game-sequences or multi loads let me have them at the usual address: Spectrum Column, *New Computer Express*, Monmouth Street, Bath BA1 2BW.

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VISA

'62, 50, 201, 0, 128', you would poke 32768 with 201 - 128 * 256 + 0 = 3276.

"This saves all that typing and means you don't have to load up a routine from tape each time you want to cheat on a game."

PLUS POINTS

The thoroughly sound and very clever Adam Tomasso of Inverness-shire can always be relied on for a good tip or three. He's managed to illuminate the once mysterious world of variables for everyone on past occasions and he's just written to offer a bit more of his vast knowledge for the general good.

Following his advice on saving variables on the Plus 3/Plus 2A RAMDisk last week he wants to add something:

"This method works fine but to do it better this is the command to save dimensional arrays:

```
SAVE "filename" DATA
"dimension name"()
```

"As you can see it allows you to give dimensional arrays full names."

In a similar vein, Adam also offered a small program that lets you save arrays with full filenames. Er, here it is:

```
10 REM Adam Tomasso 10.5.91
20 REM Written in +3 BASIC,
   coded on a +2A Spectrum
30 REM Save arrays using full
   filenames on the +2A/+3
   RAMDisk
40 DIM a$(100,8)
50 FOR n=1 TO 100
60 LET a$(n)="spectrum"
70 NEXT n
80 SAVE"m:spectrum v" DATA d$
   ( )
```

"RUN this and try printing some string variables, eg `PRINT a$(53)`, and then reset your Speccy. Load the variables back in using:

```
LOAD "m:spectrum" DATA a$()
```

and then try printing the variables again. This should work. Not bad, eh?"

Pretty blooming good, in fact. Hope that proves useful to Plus 3 and Plus 2A owners out there. And if it does you definitely owe Adam Tomasso a favour.

SWEEVO'S POKE

Another regular member of the hacking posse, Steven Kemp, has kindly sent in this poke for *Sweevo's World*, which was recently given away on the cover on *Your Sinclair*. Thanks Steve!

```
10 REM Sweevo's World by
   Steve
20 CLEAR 24799
30 LOAD "" SCREEN$
40 LOAD "" CODE : LOAD ""
   CODE
50 POKE 356957,X : REM 'x' =
   no. of lives
60 POKE 33122,182: REM
   Infinite lives
70 RANDOMIZE USR 24800
```

Robin Alway

MACINTOSH

- **Dial-a-System 7 manual service in the States**
- **What will and what won't work with System 7?**
- **Revealed! The features hidden behind the keystrokes**

SYSTEM 7 NEWS

● Anyone who chooses to download System 7 from bulletin boards in the States can now receive telephone support – for a mere $2 per minute.

Apple has announced that anyone who has System 7 without the manuals can call a 900 number in the States – the equivalent of our 0898 numbers, only even more expensive.

Unfortunately you can't dial 900 numbers from the UK, so we still have to fork out £50 or so for an upgrade.

● You've probably already found that your Apple menu is unmanageably long, because as well as DAs you've also put aliases of all your Applications in the Apple menu items folder so that they're easy to launch (*OnCue* RIP).

So how about this instead? Put aliases of your applications in a folder, and put that folder in the Apple menu items folder. That way, when you select the folder from the Apple menu, it will open revealing icons of all your applications – rather like the Control Panels folder.

OK, so it takes fractionally longer to launch an application, but at least your Apple menu isn't ridiculously long.

● Many people are saying that with the advent of the new System, *Suitcase II* is no longer needed. Well, yes and no.

It's certainly the case that you don't need to use it in order to have more than 15 DAs resident in the Apple menu. And now that *Font/DA Mover* has finally bitten the dust (cheers cheers) it's much easier to install fonts.

But what about people who have large numbers of fonts, but only use certain ones for certain jobs? In particular, bureaux which have many hundreds of fonts will find that installing them all into the System will result in a ludicrously large file, and applications with Font menus several feet long.

So don't chuck *Suitcase II* away just yet – or you might regret it.

TIPETTES

The Mac is a very powerful machine but many of its features are just a little too well hidden. So, here is the first in an occasional series of tips to help the novice get the best out of the Mac:

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POSTCARD FROM AMERICA

New users will have little problem adjusting to System 7, and neither will users that have always operated with a plain vanilla Apple setup. Power users, people that have spent years customizing their desktop with INITs, CDEVs, and utilities, however, will have some painful withdrawal symptoms.

The new software incorporates many features found in commercial products, but not all, or in exactly the same manner. Users have spent countless hours getting things "right," learning little quirks, and tricks. They've also shelled big bucks for that privilege. These perfectionists will need some time to acclimatize themselves to the System 7 implementation of their virtual body.

John Norstad, the author of Disinfectant, the anti-viral program, has been pulling out his hair recently. Apple includes a HyperCard stack as part of System 7 that analyses the programs on your hard disk, and tells which have problems with the new operating system.

Unfortunately, it incorrectly reports that Disinfectant 2.4 is incompatible, and recommends you get version 2.5. There is no Disinfectant 2.5, and there won't be one!

John says that version 2.4 works fine with System 7, provided you leave the *Disinfectant* INIT in the System Folder proper. Don't move the INIT to the new Extensions folder.

He says there is one "small problem" with Disinfectant 2.4's custom Get File dialogue, which lets you select a folder to be scanned. Don't try to select any files or folders in the new Desktop level in this dialogue, or Disinfectant may crash. Version 3.0 will be out in the summer, with lots of System 7 goodies.

David Morgenstern

SYSTEM 7 COMPATIBILITY

Worried about whether your utilities and programs are compatible with System 7? Check out this list.

Program	Compatible?
911 Utilities 1.0	Yes
After Dark 2.0	Yes
Aldus PageMaker 4.0	Yes
ATM 2.0	Yes
Capture 3.0	Partly*
Compact Pro	Yes
DiskDoubler Application (3.1)	Yes
DiskDoubler INIT (3.1)	No*
DiskTop 4.01	Yes
DOS Mounter 2.0	Yes
FastBack II 2.5	Yes
HyperCard 2.02	Yes
LapLink Mac 3.0	Yes
MacWrite II	Yes
MicroPhone II 3.0	Yes
Microsoft Word 4.0	Yes
Norton Utilities 1.0	No*
Pyro! 4.0	Yes
Quark XPress 3.0	Yes
QuickDEX 1.4	Yes
QuickKeys 2.0	No*
ReadEdit 2.1	Yes
SAM 3.0	Yes
SonPC	Yes
Stuffit Classic 1.6	Yes
Stuffit Deluxe 2.01	Yes
Suitcase II 1.2.9	Yes
Timbuktu 4.0	Yes
Turbo Pascal	No
Vantage 1.5.1	Yes

* Upgrades due

If you're writing a list and you want to put a bullet-point ■ the beginning of each item, just hit Option-8 for a small blob.

For a larger version, change font to Zapf Dingbats and press the 'l' key. If you're using QuarkXPress, you can do the same by hitting Shift-Command-z, then hitting 'l'. Shift-Command-z tells the program that the next character you type should ■ displayed in the Zapf Dingbats font.

● Accents above characters (é, ã,)

You may ■ surprised to know that generating characters like ■ and ■ are very easy; it's just finding out how that isn't. Key Caps doesn't give any clues.

To generate an acute accent above a letter, press Option-e and then the letter. Of course, this only works with letters which are supposed ■ be accented – a, e, i, ■ and u.

Experimentation ■ the name of the game! (Try Shift-Option-k . for instance.)

Umlauts (ä)are generated with Option-u and then the character; obtuse accents (é) with Option-' followed by the desired character.

There are many other 'surprise' characters available; the best way to find them is either with a public domain utility which prints out the whole character set, or with *KeyFinder*, a DA which is free with *Norton Utilities for the Macintosh*.

Again, remember that although these things are fairly standard, they do vary slightly from one font to another, so don't be too surprised if what works when you're using Times doesn't when you change your font to Fenice or Baskerville

Ian Wrigley

WHOLE WIRED WORLD

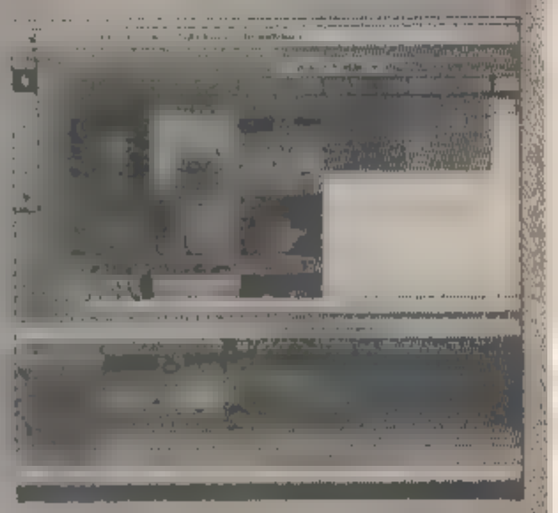
International jet setter Steve Gold sets the global scene for the latest computing news. This week Nintendo announces a date for its Supergame System, Lotus' *1-2-3* moves into the Mac environment and US Police crack a major hacking scam

APPLE, AT & T AND NOVELL JUMP ON THE ISDN BANDWAGON

Apple, AT&T and Novell have formed a high-speed networking consortium with the express aim of finding commercial applications for ISDN (integrated services digital network) technology. Several other smaller companies are discussing joining the not-for-profit consortium.

Why the consortium? ISDN looks set to be big business. The technology neatly side-steps the problems of telephone network capacity and allows computer technology to be used over standard phone lines. While the companies concerned are obviously looking to their own future profits, the technology could reap rewards for users as well. At Comdex Spring in Atlanta last month, Dennis Hayes, founder-president of Hayes, the modem manufacturer, said that ISDN represents the way forward for modem technology users.

The reasons, he said, are that ISDN is a powerful way of integrating telephone and computer technology together. It enables simultaneous transfers of voice, data and video. The fact that it uses existing phone circuits explains why industry majors are so eager to team up.



• With ISDN you can transfer computer data and video over the same phone line

COMPUTER IN KEYBOARD DEBUT

When the early home computers appeared on the scene in the mid-80s, most were single-part units with the keyboard and CPU casing combined into a single unit. The advent of the PC and then the Mac, as home machines, closely followed by the Amiga 1000, soon made the multi-part computer the norm. However, now a small Canadian company, Zeno Computer Products, has come up with a back-to-basics system, a computer in a keyboard.

The Zeno system's case ■ a 101 key keyboard that has a standard keyboard footprint, and a height of two inches at the front, three inches at the back. Tucked away inside the keyboard case in an 80286 microprocessor driving 1Mb of RAM (expandable to 4Mb internally), a single 3.5-inch high density floppy drive and a 40Mb hard disk.

Unlike many of the early single-part PCs, such as the AMT Sport and Schneider home PC, the Zeno PC comes with sensible graphics – VGA is fitted as standard – along with twin serial and single parallel ports. A single game port and expansion slot are also fitted as standard on the machine.

Pricing on the Zeno PC is quite reasonable! – $999 gets you a 286-based system, while, for $150 extra, you get the same configuration equipped with a 16MHz 80386SX microprocessor. Both models come with ■ two-year guarantee.

Contact: Zeno Computer Systems, PO Box 3518, Ontario, CA 91761, Canada. Tel: 0101-714-923-4841 Fax: 0101-714-923-6519.

TOSHIBA US CUTS LAPTOP PRICING - AGAIN

Toshiba America has slashed pricing on its notebook PCs for the second time in a month. The move makes Toshiba's notebook PCs even better value from the US and will put a great deal of pressure on the Japanese giant to adjust its pricing in the UK.

US pricing on the T1000SE, originally released 18 months ago, has been cut from $1,199 ■ $999. Pricing on the T1000XE meanwhile has been cut from $1,499 to $1,399. Both machines were also amongst the notebooks and laptops reduced in price in May. At that time the T1000SE, which weighs 5.9 pounds and comes with 1Mb of RAM and a 1.44Mb 3.5-inch disk drive, was cut from $1,499 to $1,199, while the T1000XE was cut from $1,899 ■ $1,499. The T1000XE weighs 6.2 pounds and comes with a 20Mb hard disk.

LOTUS POWERS INTO THE MAC ENVIRONMENT

• Lotus 1-2-3 – Mac version due this autumn.

Lotus has announced it is developing versions of its *1-2-3* spreadsheet package for the Apple Macintosh. Initially, two versions will be released this autumn – a stripped-down version for academic users and a mainstream commercial version for everyone else.

The academic release of *1-2-3* for the Mac will sell for $99, while the commercial edition will sell for $495. Both packages will be released simultaneously in the US, although exact pricing and availability have yet to be determined for the UK marketplace.

Lotus also has said it is working with two educational publishers – Addison-Wesley Publishing and Course Technology – to develop special textbook editions of *1-2-3* for the Mac. Textbook editions will combine a student version of *1-2-3* for the Mac with the publisher's textbook.

NINTENDO'S SUPERGAME SYSTEM DUE THIS SEPTEMBER

Nintendo US has announced that its long-awaited supergame systems will reach the North American marketplace this September and cost $199-95. The company says it expects to sell two million ■ them this year.

The new 16-bit Super Nintendo Entertainment System got its formal unveiling at the Consumer Electronics Show in Chicago this week. According to Peter Main, Nintendo's marketing vice president, the company is not abandoning its older 8-bit system either. That's a good job too, as the company reckons that its older 8-bit games consoles are in a third of all US homes.

MAJOR HACKING SCAM IN US

Things have been fairly quiet on the US computer hacking scene this past few months, so it comes as something of a surprise to learn that Indianapolis police have raided five homes in the area and seized computer equipment from several alleged hackers.

According to the police, the scam could have cost a local company – which was not named – as much as $300,000, making it one of the biggest computer hacking incidents this year.

Lieutenant Jack Sandlin, director of the Indianapolis police department's white collar crimes unit, said that no arrests were made in connection with the case, primarily because the six hackers were under the age of 17. ■

ATARI SALES SOAR AHEAD WITH THE LYNX GAMES CONSOLE

It looks like Atari's battle with Nintendo for control of the lucrative hand-held games console business may not be over yet. Atari US has reported that sales of its Lynx games console are surging ahead, catching up on Nintendo's Gameboy system.

• Atari's Lynx could soon be joined by a new family of console-type products.

According to Lawrence Siegel of Atari's entertainment division, 500,000 Lynx games units were sold worldwide last year. "In 1991 we'll do somewhat more," he said, adding that the company is selling all of the machines it can make.

Speaking in Chicago on the eve of the Summer Consumer Electronics Show this week, Siegel said that the Lynx was well positioned in the market and currently supported by 22 games titles, with another 15 due over the next few months. By the end of the year, more than 50 games will be available for the Lynx, he said, noting that the software ramp-up is in preparation for Nintendo's Super NES games system, rather than the Gameboy system.

Atari is not resting on its laurels either. Siegel said that the company is developing what he calls "a new family of console-type products". However, don't hold your breath for the new machines, as he added that their introduction is not expected until 1992 "depending on market conditions."

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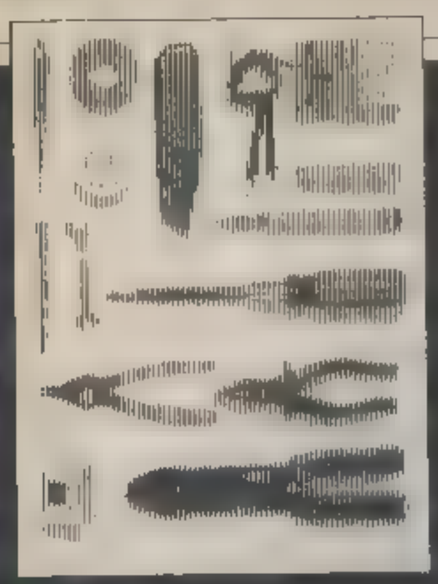


CIRCUIT CITY

The Serial Port on a C64 is anything but industry standard. Andrew Roe shows how you can bring it into line with the rest of the world

The Commodore 64 is still a very popular machine, despite its age, and it has quite a number of output options. As most owners of this computer know, Commodore printers can be connected to the dedicated serial port and there is a modem cartridge that fits into the expansion connector.

What is not quite so obvious is that the operating systems contains RS-232 routines which connect the user port to the outside world. Unfortunately to enable the user port to be used for other purposes the signals are standard TTL logic levels and so some form of level shifting is required to allow the connection of RS-323 peripherals to this port.

The interface described in this article will allow a wide range of printers and modems to be connected to the Commodore with little difficulty.

THE RIGHT LEVELS

The main requirement of the interface is to convert the TTL signals of OV and +5V from the Commodore 64 to the – 12V and +12 RS-232 levels in the required voltages as these are not available from the computer. Fortunately several manufacturers have addressed this problem with a range of integrated circuits which contain almost everything on chop. The Integrated Circuit (IC) used in this project is the MAX238 which not only contains four RS-232 drivers and receivers, but also voltage converters to change the plus 5V available from the computer into the required plus and minus voltages. The only other components needed are four capacitors.

Construction is straightforward. Using stripboard is the simplest way and is shown in the diagram. Two things to note are to make sure the capacitors are correctly polarised and handle the IC carefully since it is sensitive to static and thus can be easily damaged.

Parts list:

- a x 12 way 0.156 inch edge connector
- 25 way D plug
- MAX238
- 2 x 4.7 uF 35V Electrolytic capacitors (Maplin code YY33L)
- 2 x 10 uF 16 Electrolytic capacitors (Maplin code YY34M)
- Veroboard

The MAX238 can be obtained from STC Electronics on 0279 626777.The other parts can be bought from most suppliers such as Maplin, Simpson Electronics.

The actual connections to other devices using this interface are dependant on the way the manufacturer interprets the RS-232 standard and therefore will not be covered here, instead you should refer to the manual suplied with the piece of equipment you are using.

MAKING IT WORK

To give you an idea of the use of the interface here is an example of the method used to output a program listing to a printer. First you must find out the RS-232 format of your printer, that is the Baud rate, number of data bits and stop bits, and parity. Then you must open a file on the Commodore using the following command:

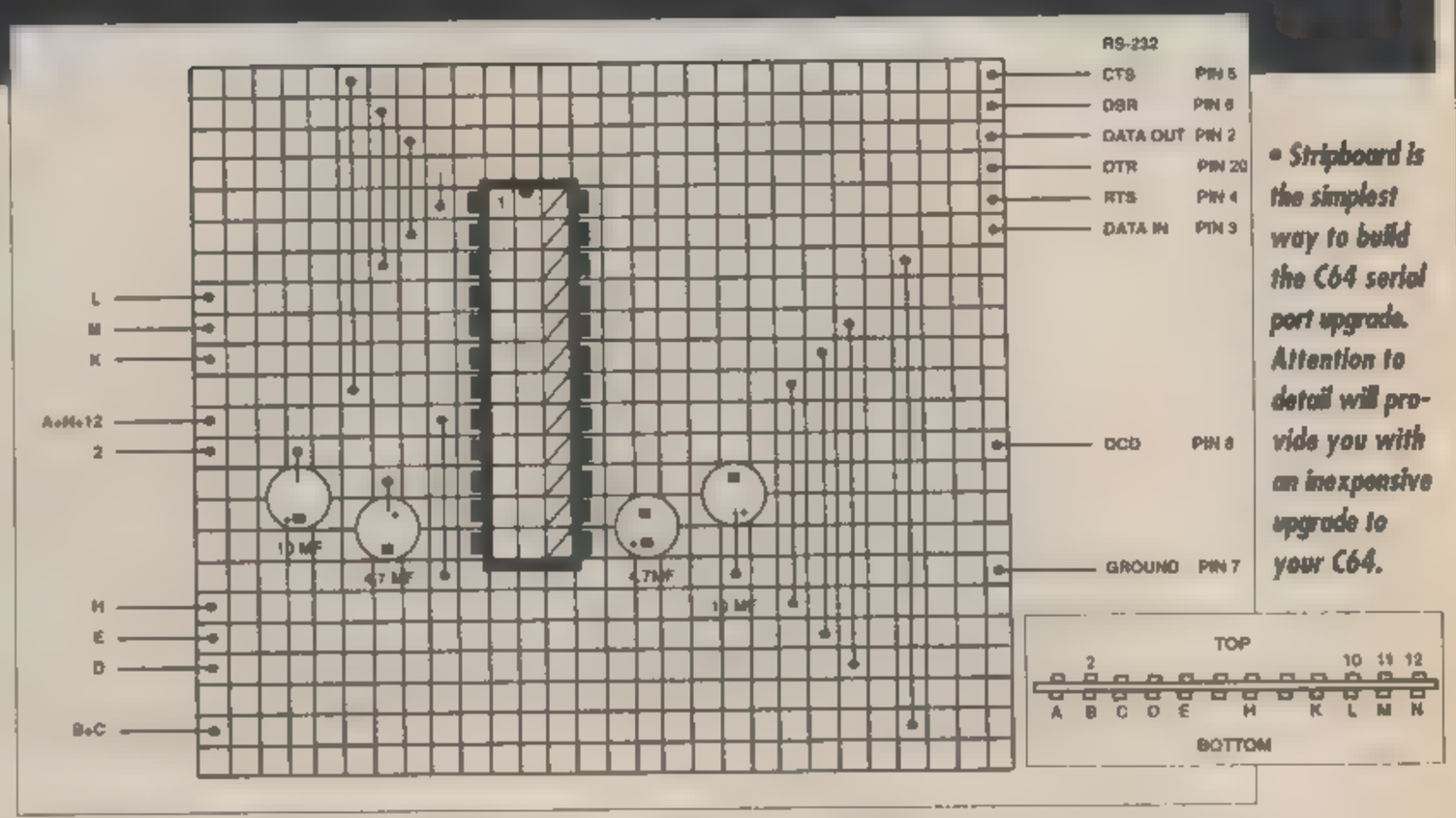
```
OPEN X,2,0,CHR$(Y)+CHR$(Z)
```

Where X is the file number (used for all subsequent commands on the RS-232 port) which can be any number between 1 and 255-numbers greater than 127 give a line feed after every carriage return used for Y sets the number of data bits, the number of stop bits, and the baud rate, and is obtained by adding together numbers from the following table.

a data bits	0
7 data bits	0
50 baud	1
75 baud	2
150 baud	5
300 baud	6
600 baud	7
1200 baud	8
2400 baud	10
1 stop bit	0
2 stop bits	128

For example eight data bits, 1200 baud and one stop bit would require Y to have the value of 8 (0+8+0)

To select parity, Z is set to one of the following numbers: `No parity 0, Odd parity 32, Even parity 96.` If handshaking is to be used I should be added to the value if Z. To list your program through the RS-232 interface you now use the command CMDX : LIST. Where X is the file number used in the OPEN command. For further information on using RS-232 you should obtain Commodore 64 Programmers Reference Guide which is published by Commodore.



• Stripboard is the simplest way to build the C64 serial port upgrade. Attention to detail will provide you with an inexpensive upgrade to your C64.

ARCHAIC AND OUTRAGEOUS STATE OF THE ARK

Here's a picture of the most archaic outrageous machine that we've had yet. The Videomaster Home TV Game represents the first generation of digital technology in entertainment.

The Videomaster is typical of the low-tech bat and ball 'ping-pong' games available in the late 1970's. The blocky black and white display offered three games with a choice of Tennis, Squash and Football. The games sounded exciting, but in reality were no more than a white blob being deflected from a white paddle off other white paddles and white walls.

They aren't much to shout about by today's standards, but in their heyday, eager punters queued at the arcade versions to invest 10 pence.

● Have you got the oldest computer, console or video game in working order? If so, send us a photo of it showing the display and you could be in for a cash prize. Send the photos to Outrageous Oldies, New Computer Express, 30 Monmouth Street, Bath BA1 2BW.

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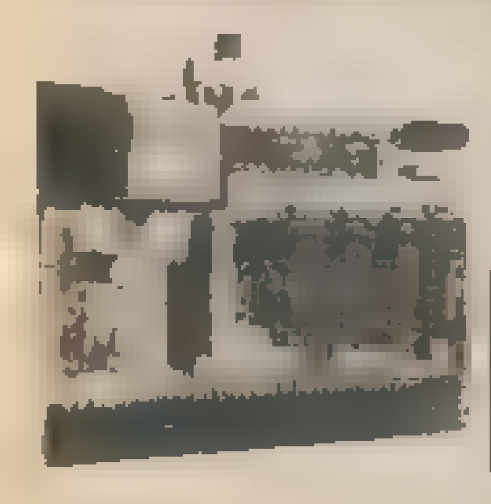

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N.B. Due to the large variance in design of the Atari ST, there is a small minority of boards in existence which may require a little soldering

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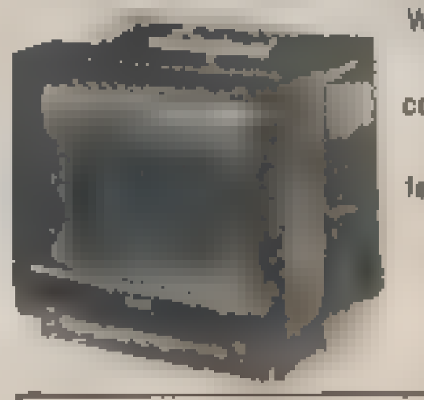

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TECH TIPS

Can't get your Amiga to talk to a video? Need to weld a PC floppy to an Amiga? Won't your Spectrums talk to each other? Keith Pomfret offers advice on all these problems and more.

Amiga video

I have an A2000 HD/Microway Fickerfixer/ADC Multisync Monitor (Diamondcomp). What I hope to do is simply tape the computer graphics such as animations to a JVC digital tracking VHS H2 video. I only want to assemble edits and not overlap computer graphics and video, thus I don't need a genlock.

My video does not have flying erase heads, but incorporates zero number frame editing necessary for assembling edits. I know the results won't be brilliant, but it'll be a start to video before buying a genlock in the future.

Do I need a modulator as the A500 uses this to output to video.

I bought an Amiga to Scart lead plugged ■ straight into the video, but can't tune in (remember I've still got a free video port) I thought the Amiga could drive a Scart video even though I haven't a Scart TV.

Gordon, Coventry.

THE SIMPLEST option if you want a composite signal for the video ■ to attach a modulator to the Amiga and take the signal from that direct to your video. There are a couple of probable reasons for you getting no joy when you try to tune in the video to the computer after connecting them together using a Scart lead.

The most likely is that the video's implimentation of Scart is different from the Amigas video output. The Amiga sends Red Green and Blue video signals. Most videos (including those with Scart connections) only have facilities for looking at a composite video signal. When we recently performed open heart surgery on seven videos, only one had Red Green and Blue implimented on its Scart connector.

All of the others had no connections for RGB, but instead had a simplified Scart interface only wired for composite video. The other alternative ■ that you have been trying to tune into your Amiga while the video is set to receive a modulated signal via the antenna socket. Some video recorders have ■ switch to enable you to use either an RF TV signal such as arrives via ■ TV aerial and a pure video signal of the kind provided by a computer, TV camera or other direct video source.

If this ■ the case, there will ■ a switch that can be moved to ■ position probably marked with signal, video or aux. Check your video's manual for this.

Fresh chips

I intend to buy an Amiga A500. I would like to know if it is possible ■ buy the Enhanced Chip Set (ECS) in order ■ run the much improved Workbench 2.0. ■ so, where could I obtain these upgrades from, and would the ECS give any other benefits?

If I was to get this fitted, would it be downwardly compatible with most existing software (so I could run games, PD software, and so on)?

Thank you for your help.

R Padley, Rotherham, S. Yorkshire.

YOU CANNOT BUY the complete enhanced chip set yet and to our knowledge only the Fatter Agnus and the new Denise chip are currently available. None of the production Amigas that we've seen have a complete enhanced chip set.

In real terms, the only benefit that a non-programmer can get from any of the new chips is the 1Mb of Chip RAM allowed by the Fatter Agnus.

The best advice we can give is to say wait for the new version 2.0 Kickstart ROMS. They may be a while coming, but it is them that will make the most difference ■ the Amiga user.

ST MIDI basics

I was once told that there existed a type of BASIC for the Atari ST, which was specifically designed for easy manipulation of MIDI. Could verify this for me or if not, tell me which BASIC would best allow me to look at the individual bits within a single MIDI byte?

G Laing , London.

NEIL JACKSON, technical wizard of *ST Format* informs me that there's no such thing as a MIDI BASIC for the ST, but recommends that if you want a well specified BASIC, you have a choice of either Hi-Soft or GFA BASIC. Both of these should be available from your computer software dealer.

Other colleagues conversant with ST programming suggested that Hi-Soft was probably the best bet, although a couple pointed out that if you really wanted to have fun programming your machine, you'd probably be best off getting an integrated programming environment such as STOS.

Speccy comms

It's me again, you know, the mad Speccy owing person. I wondered if you could help me. A few weeks ago I sent a letter to Amstrad asking if it was possible to link two speccy's together via the RS232 prot. They sent a letter back saying that they did not have the info (they only designed and made the thing!). They stated I should buy RS232 Publications, but I do not know of any.

Do you know how to connect two specs together or know of any "RS232 Publications".

Only a short letter this time, bye, bye.

Adam Tomasso
Carrbridge, Invernesshire

THE ANSWER to your question depends on which Spectrum you have.The early rubber mat and slightly later upgrade models need some sort of interface, but the Plus 2s and Plus 3s can indeed be connected together using a null modem cable and utilising comms software to allow them to talk. As we've had several questions about Spectrum upgrades, we're planning an easy upgrade round up covering extras, add-ons and peripherals for the Spectrum.

Disk drive compatibility

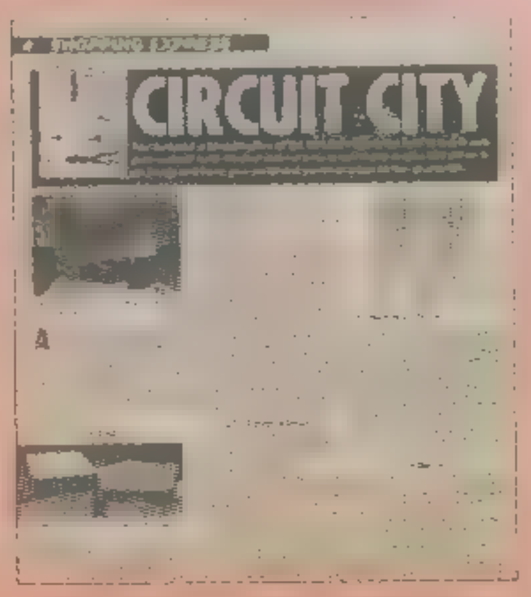
1) Can a PC external drive be connected to the Amiga, if so could you please give pin configurations.

2) I have been looking for a circuit diagram for a 8-bit sampler for the Amiga, I cannot find one, please help.

3) I would like to carry out a survey on PD programmers and users, on all computer formats, who uses what, why and do they pay the author, what sort of response do the authors get from the users, any info from readers, users and PD houses and programmers would be useful. I will place the finished survey on BBS's around the country when finished.

S Wilkinson, Exeter, Devon.

AN AMIGA can have a PC drive welded to it, but it isn't as simple as the pin connections. In order to make the two compatible, it's necessary to build an interface board which involves a couple of logic chips, ten resistors and a piece of stripboard. Incidentally this project was covered in Circuit City in *Express* issue 129.



• Circuit City in Express 129 gave all the details for using up those old IBM drives on your Amiga.

Costly colours

I am very interested in the import and export of colour images to and from a computer, in particular high definition images. Input options would appear ■ be either scanned or digitised. What is the difference

between resolution and quality?

Output options seem very restricted. I would prefer to control it myself rather than use a bureau, but do not feel that a colour DMP would offer consistent quality. That leaves colour lasers which are horrendously expensive or a colour inkjet.

At present I own an ST and an Amiga presumably both would be limited in the manipulation of images. I could go the PC VGA route but if forced to upgrade, would prefer to keep compatiblitly with at least one set of software – preferably the ST, though I would consider a top end Amiga as an option.

I have no interest in animation and am solely concerned with manipulating still images in as near photographic quality as possible. I realise that this is a complex subject for a letters page, but any help will be much appreciated.

Also, with my present set of 4Mb ST and 1Mb Amiga I was planning to add an HP Deskjet for printing to a paint jet would not be too big a step up if it is supported by drivers.

Paul Bates, Derby

TO ADDRESS YOUR FIRST QUESTION, resolution is the term given to the amount of pixels in the display. A 640x400 resolution screen would have higher definition than say one of 320x200. As the definition gets higher, the quality improves.

For the sort of quality that you're talking about you will need high end expensive equipment. As you suggest, a colour DMP won't be up to the task. A colour laser, Analogue CLC, or thermal wax transfer printer are your alternatives The output from colour ink printers that we've seen so far won't make the grade(although some are getting close).

The cheapest solution is the hot wax printer and you won't see much change out of £6,000 for one of those. To address the other problem of quality images, there are bureaux providing broadcast quality pix for the Amiga (with the ST soon to follow). If you decide to take the PC route, there's a new system from Kodak where you can take photographs using a 35 mm camera.

Instead of the film being processed into negatives, prints or transparancies, it is processed in a way that allows it to be stored on a CD. Up to 100 pictures of the sort of definition only hitherto found in silver halide photo processing can be saved to a CD. The CD doesn't have to be filled in once so output from more than one film can be saved on it. A CD ROM drive and software allows the manipulation and editing of pictures.

Which brings us back to output. In order to take advantage of any high resolution picture, you'll need a good printer. In order of cost, the options are:

Colour inkjet (which doesn't have the sort of driver support necessary for the versatility that you require): £400+.
Hot Wax thermal transfer: £4,000 plus.
Colour laser printer/photocopier: £14,000+ for the basic machine. Upwards of £40,000 if you include the interfaces and software needed to make the best of it.

Although you say that you don't want to use a bureau, it will probably be the most cost effective way to get good results unless you have money to burn.

Battery power

I own an Amstrad PPC640 and to avoid the costly use of Duracells if I want to compute on the move I have made a battery pack out of old car batteries that I can carry on my bicycle. It's a bit bulky (see picture) and I was wondering if you could think of a better solution.

Roy Price, Rhyader

• Roy price from Rhyader reckons to pedal this lot up the Elan Valley to power his PPC but we think he's telling us porkies...

Erm ... Who's kidding who. It's a lovely picture but not even the editor of sister magazine Your Sinclair was fooled by it. You should be able to make up a battery pack of rechargable Ni-Cad batteries for the PPC although it will need to be external as you'll need more batteries.

NiCad batteries only produce 1.2 volts compared to the 1.5 volts of a normal dry cell. A good idea would be to wire the external battery pack to allow you to still use conventional batteries in an emergency.

Batteries and printer

I have some information that may not really be a Tech Tip, but did work for me.

The battery back up clock in my Amiga went down ages ago, and remained so for weeks. I managed to change it for another that also went the same way after a while. I proceeded to disconnect everything including the official RAM and clock. Looked at everything, was none the wiser and put it all back together again.

This was some months back and I have had no trouble since. I only mention this because one of your readers did a similar thing a white back and had the same result. He wanted to know the answers to some questions, but you would not tell him unless he said how he managed to get his clock working. Can you explain this madness?

Now for a real Tech Tip. I wrote ages ago concerning horizontal spaces on graphics and text printed on my MPS1230 printer, I sent loads of samples to you and Commodore and no one helped. I have now sorted it out myself.

I changed the printers preferences from. LF=LF+CR, and CR=CR+LF, to LF=LF, and CR=CR. No more horizontal blank spaces.

Steven Blease, Manchester

TWO TIPS. Quite often, a failure is caused by a bad or faulty connection and the remedy as simple as taking apart and re-connecting.If this doesn't work, edge connector contacts can often be cleaned with nothing more high-tech than a pencil eraser. Thanks for the printer solution. Now other Amiga owners with MPS 1230 printers can benefit from your experience.

The wrong type

A few weeks ago I wrote and presented you with a little problem but I have not noticed it printed in Tech Tips. So here goes, yet again (more briefly).

During printing from my STE to a Quen-Data (make probably irrelevant) typewriter (switched into printer mode), printing usually suddenly ceases and the STE says "seized up" until time has elapsed for printing to be completed. Yet occasionally the set-up will print out the very same text in full. What gremlin is in it? I do not like having to try 20 PRINT commands until I get one that is fully obeyed.

Richard Watkins, Shropshire.

THE PROBLEM seems to be one of data volume. While some typewriters have a mode that allows them to be used as a printer, they don't generally have all of the useful features of a printer such as a large data buffer. Your typewriter could be causing a data seizure by not being able to handle the speed and amount of data sent by the STE.

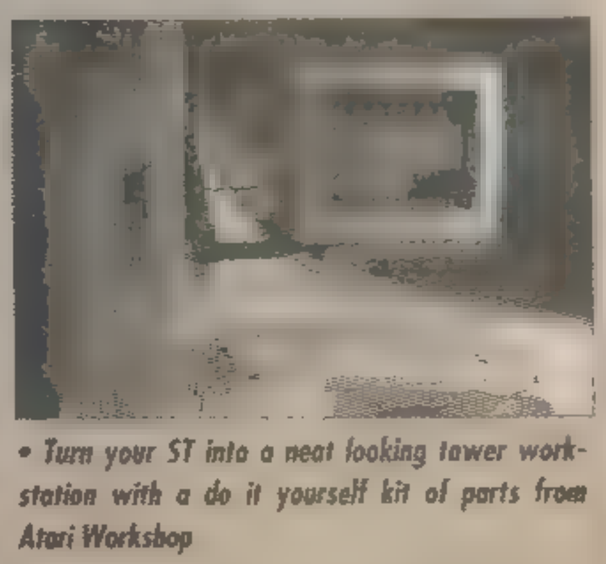
Another thing that could be causing hold-ups is if the typewriter isn't able to send a message back to the STE telling it that it is full of data and to stop sending. The simple answer is to contact Quen-Data and ask them for the relevant data and protocols for using their typewriter as a printer. ■

Write to Keith Pomfret, Tech Tips, *New Computer Express*, 30 Monmouth Street, Bath BA1 2BW.

ST workstation

My brother has a Checkmate 1500 Amiga and it set me thinking. It is a much more professional looking box than his original Amiga and the remote keyboard means that there's no clutter on the desk. Is there a simple way of adapting the Checkmate 1500 to fit an Atari ST? then the two machines would look the same and more professional.

Alan Drew, Oban



• Turn your ST into a neat looking tower workstation with a do it yourself kit of parts from Atari Workshop

A quick peek in the Checkmate 1500 confirmed that it wouldn't be happy playing host to the Atari ST. The boards, drives and other bits are all the wrong shape to fit. There is a similar product for the ST though. The Lighthouse Tower allows you to take the guts of an STM, STFM or Mega ST and put them in a rather natty looking tower shaped case with a separate keyboard.

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◆ AMIGA

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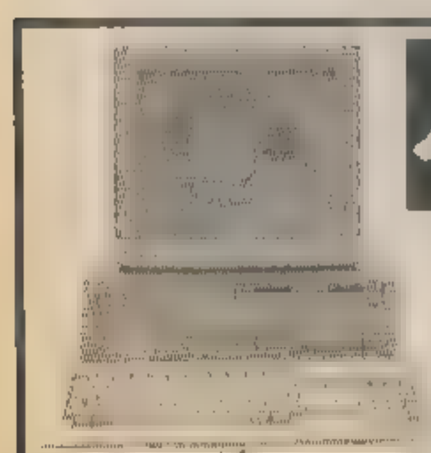

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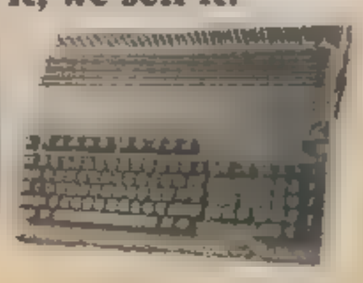

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90 P PER DISK for Atari ST/E public domain. Lots available. Send 50p coin for disk cataogue N. Rodel, 72 Lancelot Avenue, Strood, Kent. Lots + lots of demos, games, utilities, clip art, art packages + lots more.

AMIGA games clearance, 15 oldish games, all boxed and working, virus free, £70. No offers and will not split. Tel Mark on 0509 844166. Enjoy a blast from the past!

HELP! Has anybody got the system disks for an ICL model 36? Any information would be welcome. Please contact Harry on 0905 429595.

INFORMIX WINGZ (Windows spreadsheet) worth £395, unwanted prize, unopened, will sell for £275 o.n.o. Phone Liverpool 051-228 2236 ask for Carl.

AMIGA GAMES: Leisure Suit Larry 2 only £20 o.n.o. Also Ghostbusters 2 only £10 o.n.o. Write to Mike, 1 Kings Mill Road, Driffield, N. Humberside, YO25 7TF or phone (0377) 44793.

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SHAREWARE 50p per disk plus postage. IBM 51/4 or 31/2. Ring 0404 891806 or write, Combe Rise, Luppitt, Devon, EX14 QRT.

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STOS Maestro plus for ST only £35 including connecting cables and cartridge. Phone Peter on 031 441 7952. Quartet only £30. STOS basic £12. Hyperdraw £10.

HAVE you created any good clip art or scan art? If so send details to Scotsoft, 47 Auchingdane, The Tryst, Edinburgh, EH10 7HX. Originals only, must be your own work.

AMIGA software PD etc. Send your list or disk for a fast answer to: Andy, 57 Clarence Road, Wisbech, Cambs, PE13 2ED. Tel 0945 63095.

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WANTED. clip art for ST First Word Plus. All postage will be refunded. Please send disks to: 7 Holmes Crescent, Wokingham, Berks. Attention of Matthew.

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The EVENT HORIZON

Who's doing what, with what, with whom, how, why and where...

THE PLACES TO BE...

EEMA 11-12 June
The European Electronic Messaging Forum ■ the Sheraton Copenhagen Hotel, Denmark. Info: 0386 793 028.

Portable Computing ■ 18-19 June
At Kensington Town Hall Exhibition Centre, London. Info: 0256 83583.

MANIFEST ■ June
MANufacturing Initiative For Expert System Technology at SD-Scicon, Milton Keynes. Info: 0276 686 200.

CTC Open Day ■ 25 June
A chance ■ see the City Technology College in Birmingham, a college that aimes to raise the expectations and aspirations of deprived working class children. Info: 021 770 8923.

Multimedia ■ 25-27 June
At the Olympia, London. Info: 081-868 4466.

OIS IMC ■ ■ July
The document image processing conference at the Wembley Conference and Exhibition Centre. London. Info: 071 931 9985.

PC World Forum 9-14 July
In Moscow. Info from Terence Coe on 010 1 508 820 8122.

International Music Show 10-14 July
At the Olympia, London. Info: 071-730 7852.

The International 16-Bit Computer Show ■ July
At the Novotel Hotel, Hammersmith, London. Info on: 0726 68020.

GeoCon '91 11-13 August
A conference designed to give software developers from Europe, Canada, Asia and Latin America the opportunity to find US distributors. At the Sage Howard Johnson Hotel, Cambridge, MA, USA. Info: 010 32 03 234 3180.

Computer Animation Competition and Exhibition 21-28 August
At the Amiga Centre Scotland. The winners' work will be exhibited as part of the Edinburgh Festival. Members of the public will be able to make their own animations in a 'workshop' environment. Entries should be submitted either on floppy disk or PAL video tape. The closing date is 31 July. Info: 031 557 4242.

Leeds Computer Extravaganza 13-1 Sept
At the New Exhibition Centre at Leeds University. Info: 0532 677 657.

Business Communications Awards 1 October
At the Savoy Hotel, London. Entries from interested companies must be in by 15 July. Info: 0800 800 847.

Image Processing '91 29-31 Oct
At the Birmingham NEC. Info: 081-868 9933.

Computer Graphics '91 5-7 Nov
At the Alexandra Place in London. Info: 081-868 9933.

Desktop Cad ■ 5-7 Nov
At the Alexandra Palace in London. Info: 081 868 9933.

Computers in the City 12-14 Nov
At the Barbican Centre in London. Info: 081-868 4466. ■

Golden Moments

A look back into the history of computing with *Express*. If it happened we reported it first.

SAM ■ IT EVER WAS

■ Owners of the SAM Coupé must be more than a little bewildered by the up, down and up again fate of that feisty little machine. Although its market presence could hardly be said to be all-pervasive, it was certainly making the news this time last year (and the year before that).

It was two years ago this week that shares were floated for Miles Gordon Technology, the original manufacturer of the SAM Coupé. While the three directors retained a third of the shares, the rest were made available to the public to raise the £500,000 needed to finance the marketing and manufacturing of the computer, which had already been delayed for a year due to lack of money.

The share deal was part of the Government's Business Expansion Scheme, designed to help small businesses compete. Investors were required to buy a minimum stake of £500. After five years they would recover a nice, tax-free profit.

Things didn't quite work out that way. Exactly a year after the flotation MGT went into voluntary administrative receivership, just as software designed specifically for the machine was beginning to make an appearance.

The SAM Coupé, as well as being Spectrum-compatible, was regarded as a high-specification machine in its own right. It seemed a shame ■ let it die. There were rumours that Amstrad would ■ interested ■ taking it up, but nothing came of this.

■ was not lost. SAM Computers Limited formed in the autumn of last year, dedicated to taking the SAM into 1991... and perhaps a little longer. The company was formed by Bruce Gordon and Alan Miles - two of the three original directors of GMT. Good news for the SAM: bad news for the shareholders. Yet, with the price of the 16-bits falling ever closer ■ the SAM's £200 mark, its future once again looks less than certain.

The Insider...

You've read hard news of launches and speeches. Now read the news which was never supposed to get on to the pages of this or any other computer magazine

Would you believe it? Everyone has been in the Windy City for the week. By that The Insider means, of course, that the computer glitterati has been at the Consumer Electronics Show (CES) in Chicago. This means that scandal has been thin on the ground. Never mind, we shall plough through. By the way, do remember that a fabulous five pound note is on offer for any bits and bobs which land on the desk of The Insider, and are used. Send your scurrilousness to: The Insider, *New Computer Express*, 30 Monmouth Street, Bath, Avon BA1 2BW.

CID PLAYS A BLINDER AGAIN

Dear oh law, it seems that hackers, and crackers up north have a direct line to the authorities. Unhappily, this line appears to have been heavily crossed over the last few weeks. The Insider received a phone call from an anonymous source who owns a PD Library (if you can own such a thing). The source said: "A mate of mine at the CID says that FAST will be busting the entire area next week". The gent in question had got rid of all his nasties in anticipation. A quick call to FAST produced a rather peeved "No we're not". This week, we read in the *Daily Telegraph* that video shops in Manchester were busted for carrying porn movies. It was never like that in *Z Cars* or *The Bill* was it?

WHO'S SORRY NOW?

Drink will lead to the most foolish shows of daring just ask our very own PD columnist FranK-Bum-baby-O'Connor. But a more interesting tale relates to two of those 'legendary' industry figures (LIFs). It appears that during a drunken wander back from a London alehouse, one of the LIFs suggested to the other that he was hard as nails. The other, quite naturally, suggested that he prove this brash claim. In order to do just that LIF2 proceeded to kick in the tail lights on a nearby motor. The next morning the full horror of the action became apparent to the LIFs. The car bashed in by the latter, belonged to the former. Tsk, tsk. (A bottle of champers goes to anyone who can actually name the people in question)

OH BABY JUST TELL ME WHEN

Among other hi-tech launches at CES came the Swiss lady watch from Pointers of Switzerland. You will all be glad to hear that Dr Ottried Hatzold of Munich recommends the device which, he says: "Is a natural way to plan the sex of children."

Yes readers, Swiss Lady (which claims a success rate of 90 per cent) allows couples to plan which day is the most likely to produce offspring. The watch tells you when 'boy' and 'girl' days are, when not to bother, and when you might as well have a bash for the hell of it..

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PD LIBRARIES

DANTILON DESIGN PD – Commodore 64 PD including demos, music and utilities. Send SAE for catalogue to RMS, 116 Taggart Avenue, Liverpool L16 9JA.

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BROADSWORD SOFTWARE – Atari ST PD. Send Blank disk or £1 for catalogue with SAE to Broadsword Software, Flat 4, Moreton Court, 212 Dover Road, Walmer, Deal, Kent CT14 7NB.

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MUG USER GROUP – If you either play or run a multi-user game then write with details to the MUG User Group, 4 Garden Close, Penrith, Cumbria, CA11 7UD.

THE WOOLOOMOOLOO CLUB – If you like Jean-Michelle Jarre then join the club. Write to Bryan McPhail, 14 Wentworth Square, Kilwinning, Ayrshire, Scotland KA13 6RQ. Please state NCE 131.2.

DESKPRESS USER GROUP – Is there one? Fancy starting one? If your answer is yes to either of the above, please write to me, Raymond Day, at 3 Hall Terrace, Willington, Crook, Co Durham, DL15 0QN.

MG SOFTWARE – Atari ST public domain, only 65p and £1. Send SAE for free catalogue to: MG Software, Cornerways, Beckingham Street, Tolleshunt Major, Essex CM9 8LL.

CLUB ■ – Monochrome ST user group needs members. Dedication, enthusiasm and a sense of humour are the only membership fees.Small ever expanding PD library. Write to Club M, 59 Maple House, Idonia Street, London SE8.

Let all the world know

■ you run a user group or bulletin board? Are you organising any event? Do you publishing a fanzine? Let the world know about it through *Shopping Express*. Fill in this form and send it to us at: 30 Monmouth Street, Bath BA1 2BW.

(Tick as applicable) ☐ Group ☐ BBS ☐ Event ☐ Fanzine ☐ PD Library ☐ Virus Warnings/Bugs

Name of the above .....

Your name .....

Address: .....

.....

- Write your ad in block capitals on the grid below using one word per box.
- Also, please let ■ know if any of the information on these pages is out of date.

BULLETIN BOARDS A TO F

01 For Amiga	071-377 1358	v21/22/22b/23
061 PC Support	061-443 1529	V21/22/22b/23
4/ABC	0460 64511	V21
A-Board	0375 23201	2400, 8/N/1
Above Board	0254 682862	HST
Absolute Zero Q	081-741 7233	V21/22/22b/23
Advance (Opus) Hull	0482 586285	Up ■ 2400
Airtel 0342 717800	V21/22/22b	
Aix-386	0905 52536	V21/22/22b/23
Aj Electronics	0452 309125	V21/22/23/23v
Alan Solomon's	0494 724946	V21/22/22b/23
Alchemist	0666 504597	
Alternate Reality	0352 856626	V21/22/22b/23
Alternative Viewdata	081-761 8220	V21/23/23v
Almac PC Board	0324 665371	300–2400MNP5
	0324 665460	HST
	0324 665449	Hayes V 9600
Amiga II	0619 626377	
Amiga BBS	0908 672240	HST
Amiga Board	0268 510495	V22/22b/23
Amiga Connection	081-981 9289	V21/23
Amiga Shack	0737 361178	V21/22/22b/23
Amiga South East	0293 28464	V21/22/22b/23
Amlink	021-778 5868	V21/22/22b/23
Amtech Support	0202 294716	V21/22/22b
Andrew's BBS	0384 296964	V21/V22/V22bis.
Andromeda Galaxy	0243 379430	V21/22/22b/23
Angus	061 976 1559	V21/V22/V22bis
Apparition	0268 289105	
Apple Crackers	0268 781318	V21/22/23
	0268 780724	V22/22b.
Apricot Tech Sup	021-456 2402	V21/22/22b/23
	021-456 2401	V21/22/22b
Arcade Fantasy	0533 376056	300-2400
Arcport	0252 737065	V21/23
Arena	0625 539063	V21/22/22b/23
Argus Project	091-490 0327	V21/22/22b/23
Arkham BBS	081-952 5128	V21/22/22b/23
Aspects	061-792 0260	V21/22/22b/23
ASTon-line	081-847 5389	
Attic	081-308 0466	V22/22b
Auld Reekie	031-663 9924	V21/22/22b/23
Avalon Northeast	091-564 0009	V21/22/22b
Babble BBS	0532 785964	V21/22/22bis
Babbs Tower	0394 276306	V21/22/22b/23
Banat Board	081-783 1151	V21/22/22b/23
Barnabas	0708 852526	Hst
Barney's Rubble	021-441 1801	V21/22/22b/23
Basingstoke Opus	0256 728331	V21/22/22b/23
Bath BBS	0225 83584	1/840060
Bath BBS	0225 840060.	V21/V22/V23/V22bis
Bay	0843 ■5669	V22 Bis/MNP5
BBS09	0705 736025	Hst
BBZ	081-663 3732	V21/22/22b/23
Betelgeuse 5	0463 231339	
Beyond Belief	0642 787898	V21/23
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Bike Shop	0705 827764	V22/22b
Bixbox	0634 200931	V21/22/22b
Blackpool College	0253 57941	V21/22/22b/23
Blindin' BBS	01 764-0954	V21/23
Blitter BBS	0292 671638	300-2400
Body Matters	071-603 7581	V21/22/22b/23
Bona Board	081 675 7549	2400
Boog	0252 626233	V21/22/22b/23
Boroughbridge O	0423 324532	V21/22/22b/23
Braindead Opus	0823 254352	V21/22/22b/23
Breakthrough	051-734 5817	V21/22/22b/23
Brown Bag	071-404 0897	V21/22/22b
Brunel BBS	0272 584352	V21/22/23
Budget	021 311 1068	Up to V22bis
Buz Board	081-202 9175	V21/22/22b
Buzby's Grapevine	041-762 2000	Hst
Byte Back!	081-959 8105	V23
Cargo BBS	0420 475462	V21/22/22bis
Campus Ros	0223 357445	V21/22/22b/23
Castle BBS	0276 691872	V21/22/22b/23
Cats Board	0628 824852	Hst
Catweazle	081-428 9476	V21/22/22b
Central BBS	021-711 1451	V21/22/22b/23
Chase Wildcat	0543 871562	V21/22/22b/23
Chequers	0622 891308	V21/23
Chiba City	0501 44262	
Chipboard	0532 320225	V21/23/23v
Chronos' Lair	021-744 5561	V21/22/22b/23
The City BBS	021 352 1237	300-2400
CIX	081-399 5252	V21/22/22b/23
Clapham Junction	0234 64261	V21/22/22b/23
Cliff's Corner	0502 518274	V21/22/22b/23
Club 1512	081-204 8755	Hst
Co-op Board	081-316 6488	V21/22/22b/23
Co-op Board (crs)	061-832 1961	V21/22/22b/23
Co-op Board (nicc)	0509 826339	V21/22/22b/23
Co-op B'Mouth	0202 532701	V22/22b
Co-op P'Mouth	0705 754851	V21/23
Codeomatic BBS	0472 360811	V21/22/22b/23
Communitel Demo	081-968 7402	V23v
Compass!!	0942 896661	
C'center Opus	071-928 2005	V21/22/22b
Computers 4 Christ	0926 428294	V21/22/22b/23
Connection	071-978 8540	
Connections	081-903 1309	V21/23/23v
Connex	071-431 3922	Hst
Consett Forum	0207 506179	Hst
Corby Town Opus	0536 205113	V21/22/22b/23
Cornwall Gate Opus	0752 848806	V21/23
Cp/m User Group	0753 868196	V21/22/22b/23
Crown Green	071-245 1512	V21/22/22b/23
Crystal Junction	0384 441929	V21/V22/V22bis/HST
Crystal Tower	081-886 2813	V21/22/22b/23
Cure	0604 27865	Hst
Cv Database Bb	0427 810211	V22/22b
Cyberspace Amiga	0295 275045	V21/V22/V22bis
Cynotel	081-346 2816	V23v
DIE	061-434 9907	V21/22/22b/23
Dabblers' Lair	0270 624248.	
Dambusters	0203 333195	V21
Dark Crystal	081-207 2989	Hst
Dark Halo	0392 434477	Hst
Dark Side	0446 33729	V21
Darkhaven	0604 413716	V21/22/22b/23
Data Network	081-478 5464	V21/22/22b/23
Datanet	0245 323693	Up to 14.4kbps
Dataset/wanderland	081-680 5330	V23
Datasoft Opus BBS	0460 54615	V21/22/22b/23
Datatrade Q	0536 725180	Hst
Dbase User Group	0532 842213	V21/22/22b
DCE Board	0296 88165	V21/22/22b
DCS	081-879 7578	V21/22/22b
Delta	0252546269	
Deep Thought	0634 683696	Hst/v32
Desert	0244 550332	V21/22/22b/23
Desert BBS	0604 758126	V21/22/22bis
Diamond Opus	0791 86504	Hst/v32
Diggertel #1	0925 411265	V21/22/22b/23
Digital Matrix	021-705 5187	V21/22/22b/23
Direct Access	0935 79760	up to 2400
Direct-line 1	081-841 1847	V21/22/22b/23
Direct-line 2	081-842 2030	V21/22/22b
The Dock	091 454 6978	300 to 2400
Domain BBS	081-773 2422	V22/22b
Dragon's Tower	081-202 0709	V21/22/22b
D-TEL Viewdata	0325 332117	V23
Dunedin Blackhole	031-669 2974	
Dwarfen Realm	0376 501036	V23v
Eddie's BBS	0635 71324	V21/22/22b/23
Edinburgh Castle	031 334 7043	HST
Empire BBS	0473 683215	V21/V22/V22bis
Empirical Research	0543675158	V21/22/22b/23
Empyrion	0792 580781	V21/22/22b/23
End ■ End	0376 84644	V21/22/22b/23
End Zone	0524 752245	V21/22/22b/23
Engineers Workbench	051-327 7036	V21/22/22b
Equaliser	0232 454097	V21/V22b/V23
Eureka II	081-683 0629	V21/22/22b/23
Exchange S/w	0767 5051	V21/22/22b/23
Eye-2	0525 715789	V21/22/22b/23
Fal Opus	0736 794827	V21/23
Falcon BBS	081-527 4165	V21/22/22b/23
Family Skeletons	0480 812097	V22b
Fido Uk1	0734 713909	V22/22b
Flight Path	081-759 1957	V22/22b
Focus International	0905 795002	
Focus Tbbs	0303 42690	Hst
Focus Uk	0905 774477	V21/22/22b/23
Folkestone BBS	0303 45203	V21/V23/V22/bis
Forth View	031 660 6680	V21/22/22b/23
Forum-80 Hull	0482 859169	V21
Foundation	0473 688183	12/2400
Fox's Den	0689 27085	V21/22/22b/23
Free Net One	0767 51972	V21/22/22b/23
Freelance Lynx	0480 406261	V21/22/22b/23
Friday The 13th	0642 224833	V21/22/22b/23
Full Frontal	0908 661966/672240	

CONTINUED NEXT WEEK

SPOTLIGHT ON SCOTBASE PC PD

The actual name of this new PD library is Scotbase Public Domain and Shareware Library Association, but that doesn't fit into our Spotlight logo.

Scotbase holds no truck with PC snobs and proudly proclaims that it caters for ■ll makes and sizes ■ PC.

"You don't need colour, 512K minimum RAM, a hard disk, printer or anything beyond the the most basic set-up to access the information available through our services," boasts the group.

There are no subscription or membership fees and the cost of PD is minimal: some is even free. The group also publishes a free diskmag, featuring a sales/swaps database.

Anyone interested in learning more about Scotbase should write, enclosing a blank disk and SAE, to:

R Marks, 63 Springboig Road, Glasgow, Scotland, G32 0DB.

SECOND-HAND PRICE GUIDE

● The following chart is compiled from the reader ads we have received here at Shopping Express over the past month. The items listed are those which have been advertised in significant quantities.

● Lower priced products within a range are usully in need of some repair.

● Higher priced items are invariably being sold along with numerous add ons and mountains of software. This is why figures quoted under 'range' can often be higher than the price of the machine new.

● Remember, this is only a rough guide, so if you find an Amiga down the local market for £20, bully for you.

Product	Range	Av	Trend
Spectrum	£40-110	£75	▲
Spectrum 128	£120-250	£175	♦
Spectrum Plus 2	£90-100	£100	▼▼
Spectrum Plus 3	£100-180	£150	♦
* C64	£80-250	£160	▲
* CPC464	£80-350	£185	▼
CPC6128	£140-460	£300	♦
PCW8256	£220-300	£260	▲
PCW8512	£250-350	£300	▼
Amstrad PC1512	£300-550	£400	NEW
286 compatibles	£900-975	£950	NEW
* 520STFM	£150-475	£280	▼
1040STFM	£300-700	£440	▲▲
520STE	£250-450	£310	♦
■■ TT	£50-150	£120	▼
Lynx	£50-175	£115	▲
Portfolio	£100-120	£110	▼
Amiga 500	£199-575	£320	▼
* Amiga 500 (1Mb)	£300-600	£450	▲
Amiga 2000	£300-500	£400	■■W
PC Engine	£99-250	£180	▼
Sega Master	£60-220	£130	▼
* Sega Megadrive	£80-350	£200	▲
Gameboy	£80-100	£90	▲
Super Famicom	£250-350	£300	■■W
BBC B	£270-390	£330	▼
Acorn A3000	£470-700	£550	■■W
LC10 printer	£75-160	£125	■■E

* – Advertised most frequently
▲ – More expensive than last month
▲▲ – Over £50 more than last month
▼ – Less expensive than last month
▼▼ – Over £50 less than last month
♦ – No movement
NEW – Now selling in significant volume

● The most significant trends this month were the lack of Amigas on sale, and the relative glut of 520STFMs. Are ST owners really so dissatisfied with their machines?

Among the new entries the most interesting is the Super Famicom which has only just been released outside Japan for the first time, and is not yet on sale in the UK. Its price in our chart, though, is about three times what it is expected to cost when it is released here.

SHOPPING EXPRESS BUYERS' GUIDE

While *Shopping Express* is undoubtedly the perfect way to track down the best bargains in the computer world, many people are still wary of buying products via mail order or through personal ads. This is probably because usually you are not able to have a look at what you are purchasing before you hand over your money.

We do everything in our power at this end to make sure that all the advertisements we run are above board. But here are a few tips designed to help take the risk out of buying via mail order or over the telephone.

● Be precise in describing what you want to buy. Leave no room for error. Feel free to go overboard in double checking details – make, model, specifications, colour, size, the page number and name of the magazine in which you saw the advertisement etc.

● Confirm the exact price of the article you are buying. If you are phoning a company check if there are any hidden extras, such as postage and packaging.

● Check how the item will be delivered to you and how long it should take. This is especially important with reader ads where delivery details are rarely mentioned.

● If you are writing off for the product keep copies of all letters. If you are phoning, note down details of when you phoned and who you spoke to.

● If possible enquire about guarantees and servicing. Check the supplier's policy on returns and refunds. With reader ads, it is best to make the effort to see the item personally before you hand over money.

● When possible pay by credit card for items over £100, as this provides extra cover under the credit card companies' own insurance schemes. Otherwise use a crossed cheque or postal order. Avoid sending cash at all costs.

THE PD COLUMN

PD patrolman and acid hip-hop funkster Frank O'Connor checks out the latest and greatest outrageously good music and addictive games.

Anyone out there remember a couple of months ago, a very interesting episode of *Tomorrow's World*? This episode featured a brand new way to get the most from your stereo system. Called simply 3-D stereo, it involved an original and innovative way of recording and broadcasting music.

The technical details were a bit fuzzy, but the effect was a really incredible stereo output. With a normal Hi-fi set up and a pair of decent speakers, you could hear sound all around. The effect was actually a little more impressive than previous quadrophonic and surround-sound set-ups. You heard drums and instruments in front and behind, the immediate sensation was one of extreme weirdness, but when you got used to it, the effect was mind-blowing.

A PD company called Jennix PD was nice enough to send along an

• *Tomorrow's World demonstrated how amazingly good 3-D stereo can sound. It has to be heard to be believed.*

example of 3-D stereo for the Atari STE. The demo is simply some sampled music – the theme from *Tomorrow's World*. Once you rig your STE up to a stereo system (a dead simple process involving one lead), you can fully appreciate the outrageously good quality of the STE's sound chip at work.

The effect on the STE is exactly the same as the *Tomorrow's World* demonstration and has to be heard to be believed. More 3-D sound demos are promised in the near future, so watch this space...

STE SOUNDTRACKER

Jennix also sent along a very impressive Soundtracker for the STE. Called the *Esion STE Soundtracker*, it allows you to put together some really funky tunes on the humble little STE.

The program is fully icon driven and very well presented. You can load either small samples or complete sound mod-

• *Put together some funky tunes on your STE with the Esion Soundtracker.*

ules. This means that you can produce an original track with sampled instrument sounds, or remix an existing tune.

The icon system means it is really simple to use; the various menus are obvious and intuitive. The enhanced quality of the STE's sound hardware can be put to the test with this program, but a good stereo rig-up is needed for decent speaker quality. Even the best monitor speakers are a little tinny at times.

For a complete amateur, the *Esion Soundtracker* is a joy to use. Mistakes are difficult to make and simple to rectify. *Esion Soundtracker* is one of a very few programs of this type for the STE. It's a little gem and an essential addition to your PD library.

SAMPLED TUNES ON DISK

Still on the subject of Atari music, ST owners should keep an eye out for a disk called the *Source 1*. This includes a variety of sampled tunes. All of these are performed efficiently and are well mixed.

This kind of thing is done very frequently, but deserving a special mention is the ST version of an old C64 track. This track was featured in the ancient arcade conversion *Commando*. Then it featured one of the best pieces of 64 music ever, due entirely to the skills of musician Rob Hubbard.

The version on this disk is truly wonderful. An excellent tune which is put

SHAREWARE WITH A DIFFERENCE

FANTASIA

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ALL PRICES INCLUDE VAT AND P & P

MACINTOSH SHAREWARE FROM ONLY £3.10 A DISK **

BUSINESS B03

BIPLANE This spreadsheet comes in either DA or application. Contains 12 built in formulae. This spreadsheet can have 1000 rows by 1000 columns. It also writes SYLK format for an easy file exchange.
SHORTCUT MACROS This excel macro gives the user key commands for often used menu commands such as Alignment, Border, Style and much more.
PRINT MACROS This is another macro for Excel which allows printing of up to seven ranges with a lot less hassle.
MULTIPLANE TEMPLATES A set of templates for Multiplan.
POWERPAGE This spreadsheet application gives a new look to the old familiar. For those wishing to get into the spreadsheet there is a scripting language available.
XYZ CHART XYZ Chart is a program which creates 3D charts on your Macintosh. Selecting various menu options and actions, clicking on the chart, window or around the border will change the style, the size, the chart type and the position.

GAMES G03

GOLF Popular version of solitaire
HEARTS Another Popular card game
KING ALBERT Another clone of Solitaire, variation on Klondike.
KLONDIKE The all time classic Solitaire
MAC SEVEN Stategy card game
DECK EDIT Customise the graphics on the cards. Only works with certain card games.
TRICK TRACK A dice game played in some pubs.
PLUS: Ax Headroom, Automate, Pyramid, High Roller, Mouse Craps, Loto & Bill's Casino

GAMES G05

SWAMPWITCH Save your parents and yourself from the Swampwitch and her evil minions. This game is a 2 disk set and both Disks are required for the game. The sound and graphics for this game are exceptionally good for a shareware game. A hard disk is recommended for this game as it is extremely large.

GRAPHICS GR09

3D EDIT [illegible] outstanding. It is very comprehensive and is very easy to use. It has two sample drawings with it and you are able to produce quite complex drawings.
FREE 3D This is another 3D package that is easier to use than 3D EDIT. It also has the ability to shade objects as well as produce quite complex shapes. Good for ceramic artists.
3D MOLES This program is able to show certain molecules using animation. It rotates them in 3D.
DESKTOPS Create mathematical drawings.
SHOW Slide show program to display MacPaint files.

COMMS C01

RED RYDER
This is the best communications program all round, it is also the most popular program of its kind for the Macintosh. All other communication programs are measured up against this one. Use it to call up other Bulletin Board Systems or call Compuserve etc. You can connect to almost any other computer.

EDUCATION E01

BRAIN BUSTERS Maths games for kids
GRADE Teacher gradebook program
GRAVITATION 2 dimensional orbital simulation
MACGRAPH Outstanding mathmatical function graphing program
MECHANICS 5 Small graphics programs that illustrate various principles of physics
MONSTER MATH Add up numbers and evade the monsters
OYSTER Demo system that enambles you to create your own tutorials
TINY TAFEL Geneology program that will help you get back to your roots
TOOLS FOR WRITERS The only shareware version we have seen. With it you are able to check your writing for vague words.

EDUCATION E02

GEOLOGY Various graphic programs that can be used for picture aids in geology classes. Requires MacPaint or Superpaint.
ADD Basic math tutor
HELIOMAT Fly the helicopter through the obstacles and shoot the problem that matches the answer
MATH DRILL Drills you in basic math.
MATH MOUNTAIN Answer the maths questions to get the mountain climber up the mountain
MATH MUD Give the correct answer to keep the box from falling in the mud
MATHMASTER 2 Designed to help teach algebra students many of the basics for first year algebra
MATH TUTOR Teach students various types of simple maths.

MAC STACK 4

NAME THAT PLANE quiz yourself on certain plane shapes
AIRPORT Maintain a list of Airports, VORs and plan flights, very good for the amateur
FLIGHT CHECK DEMO A demo version of a powerful stack that aids the amateur pilot. Helps you calculate the weight and balance.
SHUTTLE INFO 1.0 A very well done stack that gives you a guided tour of most areas of the shuttle and a history of its flights. Full information and a collection of nice digitised pictures make this stack a worthy addition to anyones collection.

ALSO INCLUDED: Flights Plane and Oct [illegible] Manifest (Another Shuttle Stack)

DA's DA02

FINDVALUES [illegible] real estate
FIND FILE Can't quite remember where that file is. Just enter a few letters and this DA will find it for you.
MESSAGE An electronic message board
SAVIOUR Saves your files for you.
ALSO INCLUDED: Clocks, Doodle pad, Hexpage, Mesunk, Concorde, Desktrap, Devtools, Phone Book, Terminal, Windows, World Time and many more

PROGRAM P02

SESAME C This is a powerful development system that includes a C compiler and it's own 68000 assembler. Compiles quickly and automatically saves assembly code to disk. This compiler has been tested and works well with all source code provided.
NOVASOFT EDITOR This C editor comes with it's own source code.
ALSO INCLUDED: [illegible] Sort, Simple Tools, and a DA which will display the first 128 characters of any selected font in Decimal, Octal and hex.

PRICES

BUY	PAY
1 - 5	£4.00
6 - 10	£3.85
11- 15	£3.70
16- 20	£3.55
21- 25	£3.40
26- 30	£3.25
31- 50	£3.10

Prices are per disk

Packs of blank disks.
10 * 3.5" Disks £5.50
10 * 5.25" Disks £4.50
All these prices are inclusive VAT and P & P
** This is only a small selection of shareware that is in our library. Please ring for a free catalogue

IMPORTANT NOTICE

FANTASIA SHAREWARE
PO BOX 1254
COMPTON MARTIN
BRISTOL BS18 6JX
TEL: 0761 221585

HOW TO ORDER: PLEASE ENTER THE FOLLOWING ON A SHEET OF PAPER......
Your name and address, your daytime telephone number, your credit card details or enclose a cheque as appropriate, made payable to FANTASIA SHAREWARE. Any alternative address for delivery and a list of disk numbers, or alternatively you can ring your order through and leave all the above details.

together with some brilliant samples.

We received the disk from the Source PD, a company with an outstanding catalogue of compacted demos.

ACID INFLUENCES

Seventeen Bit Software can always be relied upon to turn up with fairly unusual stuff and it out did itself this week with a couple of things. The first is a music disk called Techno Uproar.

This is a disk full ■ the brim ■ hard core techno rock with obvious acid influences (God, I sound like pretentious music journalist). The tunes are brilliant even if you don't like the music, you'll appreciate the quality and quantity of samples. The tracks have been arranged superbly and feature remixes of popular club tracks.

The music ■ undoubtedly brilliant, but unfortunately there is no graphical accompaniment. This might prompt you to ask; Why not buy the records? But then, where can you get five 12-inch singles for £1.50 these days?

The second bit ■ stuff from Seventeen Bit, ■ a neat little game called *Blob-a-Blob*. It is just as daft as it sounds. The object of the game is to guide a Blob (spookily enough) along platforms, painting them as you go. Getting in your way are other blobs ■ different shapes and sizes, as well as dangerous floor sections.

The graphics are sharp and simple and the music fun and jolly. The game ■ a timeless blend of platform action and hideously cute sprites. It is highly recommended. ■

WHERE TO GO WHEN YOU FEEL THE NEED FOR SOME FUNKY PUBLIC DOMAIN SOFTWARE

ST DEMO dudes should get in touch with the Source PD at:
The Source PD, 7 Shearwater Lane, Norton, Stockton on Tees, Cleveland, TS20 1SH.

AMIGANUTS will be happy to supply you with groovy Amiga PD, you contact: Amiganuts United, 169 Dale Valley Road, Southampton SO1 6QX.

SEVENTEEN BIT SOFTWARE will sort out your Amiga needs, you contact: Seventeen Bit Software, PO Box [illegible], Wakefield WF1 1XX, Tel: 0924 366982.

JENNY PD is a [illegible] strangely named PD supplier, at least take care of your ST and STE needs if you drop a line to: Jenny PD, 36 Abbey Road, Strood, Kent, ME2 3QE.

FRANTIC AMIGA CONVERSION

• Frantic Freddy races up and down those ladders in time to the vocal chords of his namesake (Mercury), but watch out for those hungry monsters – you could stop once too often to get at those goodies.

Amiga gamesplayers should check out a little game from Amiganuts. It's a conversion of a really gnarly old 64 game called *Frantic Freddy*. The game itself is a highly addictive platform derivative and one with enough original features to give it lasting appeal.

The game sees you controlling the hero, Frantic Freddy, guiding him around a ladder-filled screen. There are nasties ■ avoid as you try to collect all the goodies on each screen.

This sounds simple enough, but the ladders present as much of ■ hazard as the bad guys. The thing is, each ladder is in two halves, you can go up on one side and down on the other, but not vice versa. Sounds complex? It is. As you rush around the screen like a maniac, you will forget which way is up and which way is down. More often than not you'll end your short goodie eating career in the jaws of a monster.

The sheer breakneck pace of the action will have you addicted from the start and the classic timeless gameplay will ensure a permanent place near the front of your collection. There is however one tiny snag...

I did say the game was converted from the 64. That's true, indeed it's very true. Graphically the game is no masterpiece, in fact it looks exactly like an ancient 64 game – dire. Well, it's colourful enough, but the word chunky springs to mind. Never mind, you can relax a little when you hear the groovy rendition of Queen's *Crazy Little Thing Called Love*, which accompanies the action.

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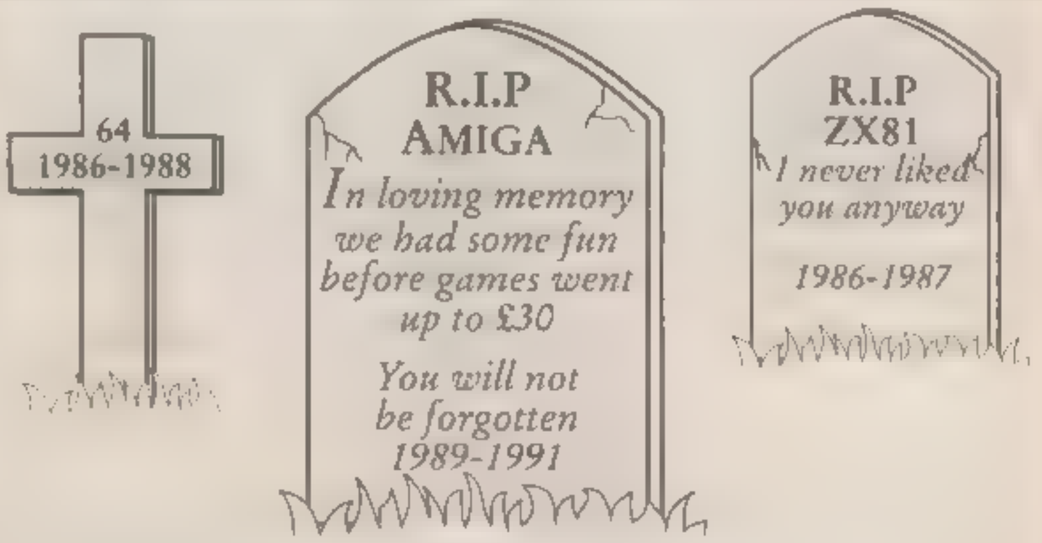

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SELECTIVE SORTING

Backwards or forwards, alphabetical or numerical order, Mary Branscombe shows you how to get your data in the right order.

It's quite rare for the input to your program to be in the right order. Usually, you will have to sort it out before you can do anything with it. Any programs dealing with marks or scores will need to be sorted into order and if you're storing records, you'll probably want to put them into alphabetical order.

There must be at least three items to sort – if there are only two then you only need to compare them directly. If there are three numbers then you compare them all and put them in order. To do this you must:

- order number1 and number2
- order number1 and number3
- order number2 and number3

You can make these comparisons in any order. To sort the numbers into ascending order, each time you pick the smaller number and put it above the larger. If there are only a few numbers, you can store them in variables and simply compare them all, but this quickly becomes unmanageable for a lot of numbers. The temporary variable is needed to store the value originally in X if Y is larger. If X is larger then the numbers are already in order (see box for an example in Pascal).

The bubble sort is very similar to this straightforward sorting. Adjacent pairs of numbers in the list are compared. The smaller numbers 'float' to the top, the larger numbers 'sink' to the bottom.

In a selection sort, you pick out the largest number and put it at the bottom of the array and then pick out the other numbers in turn.

For an insertion sort, you put numbers in order like making up a hand of cards. Choosing one number each time, put it in its correct place.

Merge sort splits the number in two, sorts each half and combines the sorted halves.

QuickSort picks a number to act as a dividing line and puts all other values on the right side of that number, then sorts the numbers on either side.

LETTERS BY THE NUMBERS

All these methods of sorting work by comparing two numbers to see which is larger, but often you'll want to sort into alphabetical order. To do this, you have to translate the letters of the words into numbers. Computers deal with letters as numbers anyway and the numbers used are called ASCII codes – American Standard Code for Information Interchange.

There are ASCII codes to represent all the symbols on the keyboard as well as other commands, to do things like controlling printers. Capital letters go from 65 to 90, so that 66 = B and 89 = Y. Lower case letters run from 97 = a to 122 = z. There's a table of ASCII codes in virtually every book or manual about programming ever published.

To sort alphabetically, you have to convert the words into ASCII and sort the numbers, remembering that capital letters have higher values than lower case ones, so that 'Z' will come before 'a'. You may want words beginning with capitals to come first. If not, you have to deal with this difference.

- **Convert the letters into ASCII**. Most programming languages can do this for you. In Basic the command is `ASC`. So:

```
ASC("C")  = 67.
```

In C, you just put the letter in single quotes:

```
'C' = 67.
```

- **Store the ASCII values.** You can put these in an array or a list, depending on the language you are using, but you may need all the letters in some words to sort them – for example "that" and "than". This would be a good time to use recursion, to go through the letters in each word, if you need to. It should be remembered that it is more efficient to convert letters to ASCII only if you need to use them for sorting.

You will also need a way to associate the list of ASCII codes with the original words. It is more efficient to store the link than to convert the numbers back to letters, although that is easy. The command is usually some variation of char - `CHR$` in Basic, `char` in C.

- **Equalise upper and lower case letters**. There are many different ways of doing this. You could divide the upper and lower case values and sort them independently, but it is much easier to convert lower case to upper. Simply subtract 32 from any value over 97. You could subtract from any value over 90 (Z), because the characters from 91 to 96 are punctuation marks. Using 97 means that any words with stray punctuation marks in will end up at the bottom of the final list, making them easy to spot.
- **Sort the lists of numbers**. If you combine this with the conversion then you can step through each word as necessary to find out whether it is above or below the next word.

Another way is to sort all the words into groups by their first letter and then sort all the words in each group by their second letter, and so on.

- **Retrieve the words**. If you have stored a link, simply substitute the word for the numbers. Otherwise, convert the numbers back to letters. ■

IN PASCAL, THE SORT CODE WOULD LOOK LIKE THIS

```
program Sort3Numbers (Input, Output);
{sorts 3 numbers in increasing order}
var Num1, Num2, Num3: Real;

procedure Order ( var X, Y: Real);
var Temp: Real;
begin {Order}
    if X > Y then
    begin
      Temp := X;
      X := Y;
      Y := Temp
    end {if}
end {Order}

begin{Sort3Numbers}
  writeln('enter three numbers');
  readln( Num1, Num2, Num3);
  Order (Num1, Num2);
  Order (Num1, Num3);
  Order (Num2, Num3);

  writeln(' in order, the numbers are ');
  writeln(Num1);
  writeln(Num2);
  writeln(Num3);
end. {Sort3Numbers}
```

The temporary variable is needed to store the value originally in X if Y is larger. If X is larger then the numbers are already in order. To sort three numbers, you have to compare six pairs of numbers. To sort five numbers, there are 120 pairs of numbers to compare. This method of sorting is slow and inefficient and there are better ways of doing it. There are several well-known algorithms and we'll see how they work next week.

MORE OR LESS

However you move the numbers around, you still have to decide which number is larger than the other. All languages give you operators to compare numbers:

- < less than
- > greater than
- >= greater than or equal to
- <= less than or equal to

Some languages, like C, give you functions that return which ever number is larger. To pick the larger or smaller of two numbers you can use:

```
max(x,y)
min(x,y)
```

In other languages you can use a conditional statement:

```
IF ... THEN
```

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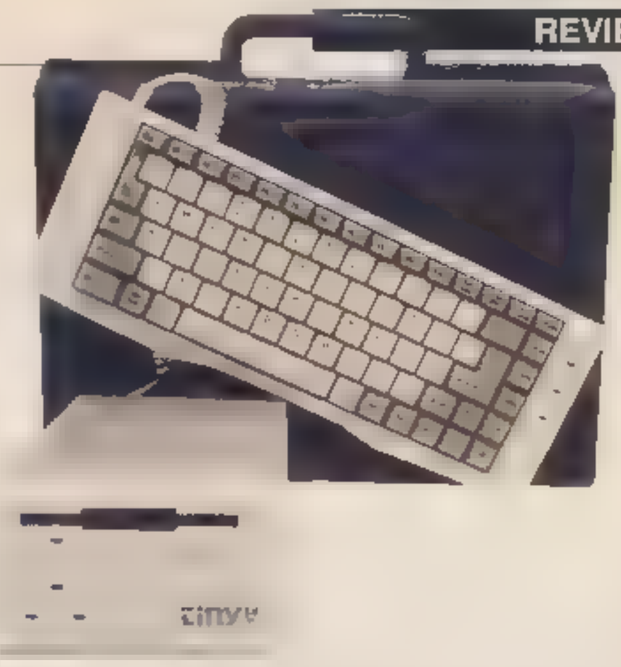


• Small enough to carry around with you. The Tiny PC crams everything into a box the size of a disk drive.

Do you want a PC that is portable without being a laptop? Keith Pomfret takes the Tiny PC for a trip in his briefcase.

PRODUCT: Tiny PC
MACHINE: PC
SUPPLIER: Tiny PC Ltd
CONTACT: 0737 779511

The Tiny PC lives up to its name by combining floppy drives, a 40Mb hard drive and all of its operating system, ports and interfaces into a box the size of a couple of disk drives.

In PC terms it isn't exciting or state-of-the-art, but is based on tried and tested technology in a format that is well known and well documented. The Tiny PC comes in three variations. The two entry level machines are based on the NEC V30 chip which is compatible with the Intel 8086 found in most XT style PCs. The V30 is quicker than the 8086 and thus gives the machine around twice the speed of the original IBM XT.

The V30 based machines are single or twin floppy and have CGA/Hercules display resolution. They are targetted as true entry level machines and have composite video outputs and TV modulators. This means that they can be used with any television or video and don't need a dedicated monitor. However, like any computer following this route, the display through a TV resolution monitor won't be suitable for large amounts of display intensive work such as word processing or graphic based programs.

The review machine supplied is the AT style 286 model. Instead of a CGA display for TV it came with an analogue VGA port, a mono VGA monitor, the faster 80286 processor and a 40Mb hard drive. A single 1.44Mb floppy is included and the whole system unit is the size of a few of floppy drives on top of each other.

REMOTE POWER SUPPLY

The small size of the system unit means that there's no room inside for a power supply. Instead, the power supply takes the form of a mains fed transformer that feeds the Tiny via a small DC socket on the rear panel. The transformer is similar to those supplied with laptops and can be kept off the desk and the supplied cable is long enough to put the transformer safely out of the way while the system unit sits on the desk. This isn't a good idea if you have a carpeted floor – dust and fluff could get into the transformer through the cooling vents and cause a fire hazard. The transformer could be placed on a ledge under the desk where it is safe.

There are those who feel that it is 'cheating' not to include the power supply in the main box, but having it separate does mean that the main unit doesn't get a chance to get too hot. This avoids the need for noisy fans which in turn means that the Tiny PC is one of the quietest hard drive machines to have on your desk.

OPERATING SYSTEM

The more usual MS-DOS is ditched in favour of DR-DOS. To those people who simply want to get a disk directory and fire programs up from the command line, the difference won't be particularly evident except when it announces itself at start-up. Users who make more use of the operating system will either love it or hate it. If you have used MS-DOS for some time DR-DOS is similar, but has some annoying differences. DR-DOS is a well specified operating system and some say that it is a world better than MS-DOS, but it seems a little strange to see it bundled with a machine that is targeted at people who will bring work home and at new users.

The Tiny PC is a spanking good buy in a niche market

DR DOS 5.0 on the 286 machine loads from the hard drive in the conventional way. On the two floppy versions, it is in ROM. This means that you only need applications and data disks and don't need to carry the operating system around as well.

THE KEYBOARD

If you have to earn your living at the keyboard, it's important to have one where the ergonomics make for a comfortable working environment. The Tiny PC has an almost full size keyboard, but like a portable, the numeric cluster can be changed on the alphabet keys. Tactile response is reasonable and the keys are well marked, although it would have been simpler to use the numeric cluster if there were dual markings on the keys.

The only qualm with the keyboard was its lightweight feel – it didn't feel solid on the desk. This in no way reflects its ability to take the pounding that it will get and it would decrease its portability, but we felt that this would be a small price to pay.

BUYERS DECISION

The Tiny PC is a spanking good buy in a niche market. It is aimed for the person who wants a PC to use as a leisure machine at home with the advantage of an operating system that can run industry standard applications. Thus, the kids can use it for games (albeit with the PC's primitive sound) and it can be used as a word processor and database for club activities and work brought home from the office. This job it does well; with the added advantage that it is small enough to carry around easily. An astute user might buy a couple of monitors and use the hard drive model at home and work, carrying the Tiny system unit in a briefcase.

It isn't the cheapest way to buy a PC, but it isn't prohibitively expensive. The entry level machines could come from the same budget as say an Amiga which makes them a choice for a home entertainment machine although with no expansion port, you can't add a sound card for Amiga quality sound.

COMPETITION

It's difficult to pick a competitor for the Tiny PC. There have been small system units such as the Brick and the Carry 1, but neither has managed to get down to the size of the Tiny. Its pricing places it as a contender for the transportable market. If a user has monitors in several places it could be an alternative to a laptop.■

WHAT YOU'LL FIND IN THE WAY OF SPECIFICATION AND PORTS

Central processor:	Intel 80286	DC input from power supply,	or the two serial ports with
Memory:	640K	Keyboard connector (5 pin DIN),	one permanently occupied by
Drives:	40Mb hard drive	Video (Standard analogue 15-pin	serial mouse, game 15D port for
	1.44Mb floppy	in 3x5 configuration), printer	the connection of analogue
Monitor:	Mono VGA	25D Centronics parallel port,	joysticks/paddles, and
Ports:	On the rear panel	Com 1 and Com 2 9D connectors	so on.

HOW DOES THE TINY MEASURE

FOR
- ▲ Small enough to fit in a briefcase
- ▲ Good documentation
- ▲ Built in games port for joystick
- ▲ Mouse supplied

AGAINST
- ▼ Keyboard too light. Moves on desk when in use
- ▼ No expansion capabilities
- ▼ No way to add a sound card for games
- ▼ Power supply separate from main unit

PRICE

The review machine was the top of the range 286 hard drive model which costs £599+VAT for the system and £120+VAT for the mono VGA monitor. Total £844.82. Single and dual floppy models for £351 and £410 respectively, with composite video and TV modulators.

Games Week

Hubble, bubble, toil and trouble ... that's Gary Penn, with another cute collection of hot news, rave reviews and terrific tips.

BUBBLING UNDER

One the highlights of the recent Consumer Electronics Show in Chicago is Sega's *ToeJam And Earl* for the Genesis (MegaDrive). And it's as odd to play as it sounds. The eponymous characters are aliens who cruise the spaceways in their ship, listening to loud rock music. It's vaguely reminiscent of Alan Moore's *DR & Quinch*. The [illegible] orange blob called ToeJam hangs loose while the three-legged Earl takes the controls – only to crashland into a 25-level planet.

The inhabitants of this planet are even weirder. Mad baby-bearing mothers try to run the aliens over, mortar-wielding chickens fire tomatoes, and a dotty dentist tries to bore holes in the 'boys'. Hawaiian dancing gals also make an appearance and then there's the Boogyman, who's difficult to see as he sneaks up on the pair of heroes and tickles them.

As ToeJam and Earl wander around the every way scrolling screen (which splits when either one moves out of range of the other) they find gifts. At first the only way to find out the contents of a present is to open it and the effects aren't always pleasant. Later the gift types can be identified, or they can be taken to the Wise Man who will do the job for a couple of bucks.

Useful items range from tomatoes to throw at the wildlife to rose bushes which grow to form obstacles. The bad gear includes a Total Bummer, which removes a life and tomato rainfall.

One of the most impressive innovations is being able to give a life to the other character, but if the mood takes you, you can always give your friend a High Five. Wild.

● Still with the CES, MicroProse was showing off a new coin-operated machines called Bots (!) – a polygon based beat-'n'-shoot-'em-up with robots. If this sounds familiar, you may recall that Electronic Arts is releasing a beat-'n'-shoot-'em-up entitled CyberFight later this year ...

Volfied is a lousy name, but it's also a peachy new version of that old arcade favourite, ***Qix***. The gist of the single-screen action is retained: a spark leaves a line in its wake. When it reconnects with the border or another line, a portion of the playfield is removed, thus restricting the movement of both the spark and its enemy, which bounces around in almost predictable patterns. With a sizeable percentage of the original screen no longer seen.

• Volfied – *a step up from that old arcade favourite, Qix.*

the level in question is deemed complete and a new, more taxing scene is presented.

The difference between ***Volfied*** and ***Qix*** is the appearance of special feature-enhancing items and a superfluous storyline, which is pretty much what happened with ***Arkanoid*** and the granddaddy of them all, ***BreakOut***. Old hand Taito was responsible for the coin-operated ***Volfied*** (and ***Qix*** and ***Arkanoid*** for that matter). ODE are the team behind the 16-bit home computer conversions for Empire, which are due for release at the end of June.

● ● ● ● ● ● ● ● ● ● ● ●

PP Hammer And His Pneumatic Weapon isn't the title of some bizarre new skin flick – it is in fact the latest from Oops Up and Power producer Demonware. PP's pneumatic weapon is a drill, which he uses to chip away blocks in his platform-packed world. This reveals useful objects such as keys to unlock doors, special performance-improving items and treasure. It also comes in handy for trapping any adversaries, in the style of that old arcade favourite ***Space Panic***.

•*Lose yourself in the labyrinthine levels of PP Hammer and his Pneumatic weapon.*

With dozens of small-scale labyrinthine levels and a smattering of secret rooms, ***PP Hammer And His Pneumatic Weapon*** is set to appear on the Amiga from the end of this month, priced at £25.53. ■

LOGICAL

NEW GAMES REVIEW

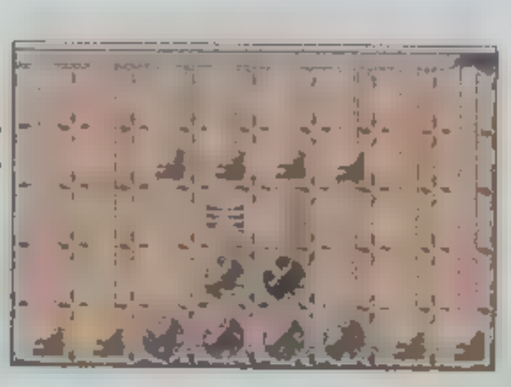
We first saw Logical in *Express* 130, but only now is it seeing the light of shop. *Logical* isn't an arcade puzzle as such – well, very few of the 100 levels demand much thought and the only real problem is the increasing size of the task and decreasing timer.

Logical is reminiscent of MB Games' *Downfall* in that a typical screen comprises an arrangement of wheels which are turned to transfer balls from one to the other. Having rolled in from the top of the screen, the balls falls wherever possible and are stored in the four holes found on each wheel's circumference. The balls are moved around the screen via the channels which link the wheels. Some channels have special features attached to affect the balls in different ways.

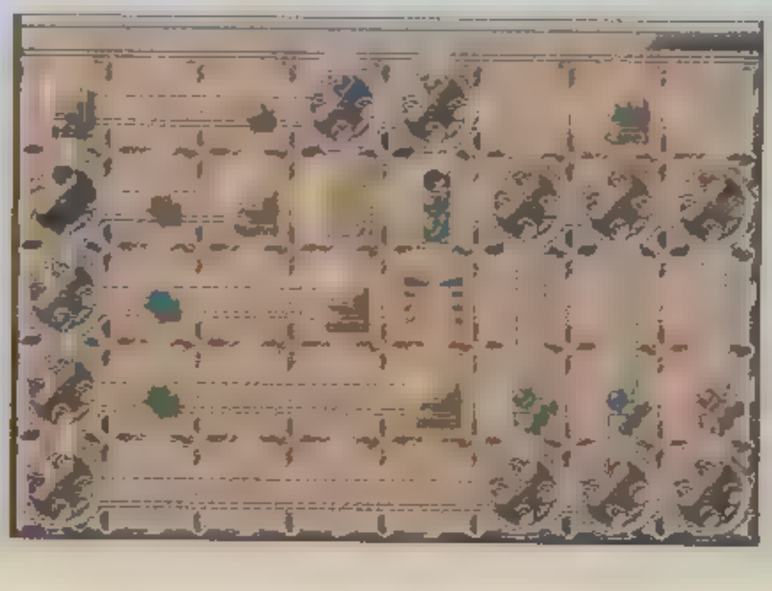
When a wheel is occupied by four balls of the same colour, they are removed and the wheel is not so much de-activated as – well, 'done'. When all the wheels have been dealt with in this way, the screen is complete. It's as simple as that.

There's nothing drastically wrong with *Logical*. It's not particularly taxing and even the least adept player can complete many screens on their first sitting. *Logical* just lacks that vital spark to keep you coming back for more. You could do far worse than commit yourself here, that's for sure. But then there's plenty more fish in the sea.

▲ *Here's one of the more simple layouts. The yellow arrows allow the balls to flow one way only. The purple arrows are teleporters.*



This screen look awkward but it's not. The balls roll down the 'tubes' and through the system of one-way gates, the arrangement of which presents fewproblems. ▶



◀ *Marginally more awkward features appear on later screens – such as this traffic light which dictates the colours of the balls used to 'kill' wheels. Here the order is purple, then blue, then green. Well it was. The wheel to the left*

NEW GAMES REVIEW

NEW GAMES REVIEW

NEW GAMES REVIEW

TOP 10 SIXTEEN-BIT GAMES

THIS WEEK	LAST WEEK	TITLE	PUBLISHER	MACHINE
1	4	*Lemmings*	Psygnosis	ST AG PC
2	■	*Fantasy World Dizzy*	Codemasters	ST AG
3	9	*Gods*	Renegade/Mindscape	ST AG
4	2	*Monkey Island*	US Gold	ST AG PC
5	14	*PGA Tour Golf*	Electronic Arts	AG PCOT
6	1	*Eye of the beholder*	US Gold	AG
7	11	*Hero Quest*	Gremlin Graphics	ST AG
8	12	*Little Puff*	Code Masters	ST AG
9	7	*Defender of the crown*	Mirror Image	ST AG PC
10	■	*North and South*	Digital Integration	ST AG

ST = Atari ■ AG = Commodore Amiga PC = IBM PC or compatible OT = Other
Chart compiled by Gallup. European Leisure Software Publishers Assoc.

PREHISTORIK

Neaderthal-based platform pranks seem to be all the rage these days, what with *Bonk's Adventure* on the Turbo Grafix console and Core Design's *Chuck Rock* on the Amiga and Atari ST. Now we have *Prehistorik.*

▲ Prehistorik *dreams about food on the title sequence preceding his quest for food.*

"Prehistorik finds himself empty handed when attacked by hunger," the story goes. "Gifted with intelligence he sets off in search of nosh." And so, for that matter, does every other species roaming in this prehistoric platform-prolific land.

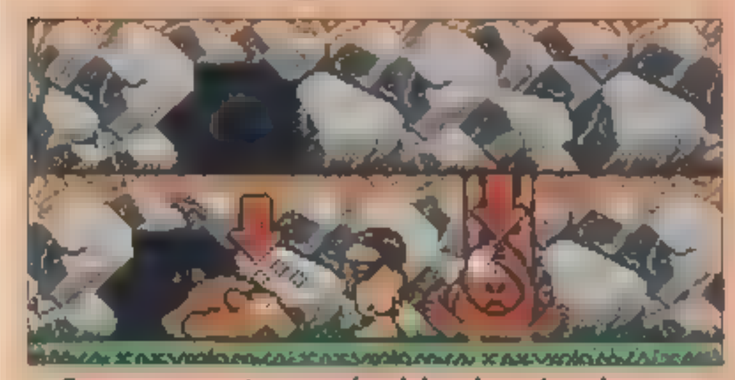
Prehistorik's armed with more than his intellect. He has his club, which he uses to collar the creatures before they do it to him. 'Rik then has to simply bump into it to push his food counter closer to the required limit and earn bonus points into the bargain. It's a pity that the creatures' collective intelligence is considerably less than 'Rik's. Their behaviour is a little too simple to impress, and as a result they lack character. The only time they show any is when they get dobbered by *Prehistorik* and look glazed. It's a missed opportunity – in fact that's *Prehistorik* all round. It would have been wonderful to see the dinosaurs et al go bonkers when they got hit once by *Prehistorik.*

The dumb dinosaurs may border on the redundant, but the scenery-based obstacles made a successful breakthrough years ago. The threat of the spiky plants and rocks only becomes apparent when you walk into them for the first time. And even when they make themselves known, the plants are easily leaped and the rocks simply removed with repeated bashing.

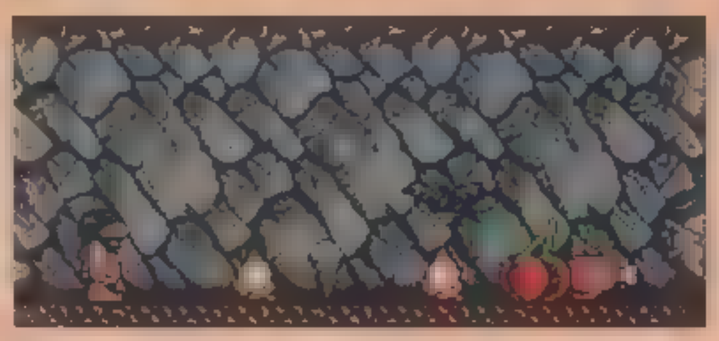
There are more animate problems too, like the use of a burst scroll to advance the screen (when the boundary of a screen is reached the next one is scrolled into view) and squatting rights of the levels (each one eventually makes its way into residence from the disk).

The music which accompanies play is misplaced, and the spot effect alternative (not accompaniment as I'd prefer) is inadequate. Most heinous of all, though, is the control of *Prehistorik.* It's just so indescribably...wrong. This is mainly due to his jumping action, which unfortunately is be the prime ingredient for success with such adventures as this scoff-orientated one.

Prehistorik should have been drowned shortly after birth – not in acid but in spit and polish. It revels in its lacklustre ignorance when it could so easily have shone in a three-piece loincloth. That's the difference a good tailor makes.

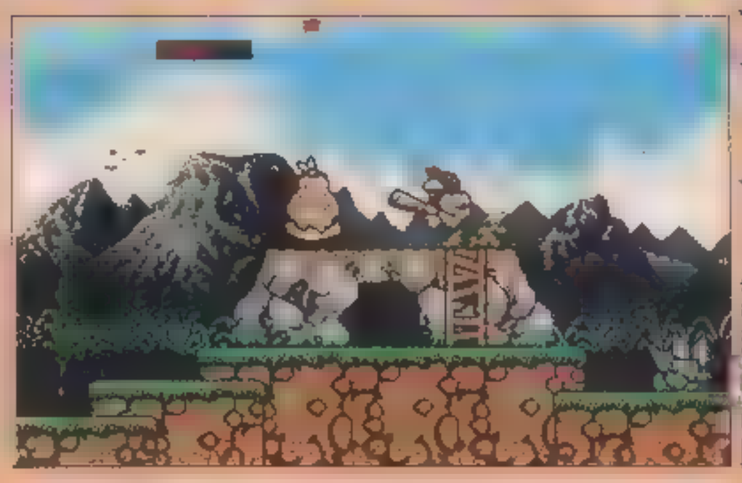


▲ *Two creatures sit stunned and dazed, ready to boost Prehistorik's nosh-o-meter. Three alternative methods of obtaining food are a little easier.*

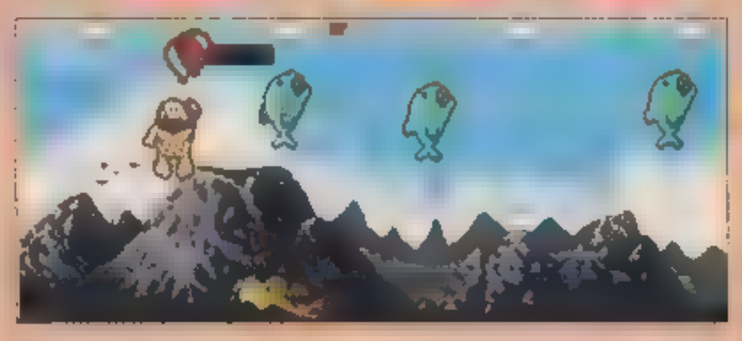


▲ *Caves are usually inhabited by spiders or bats (one is seen here). Small fires also have to be avoided if the food is to be collected. Finding a sign inside a cave indicates that its entrances is linked to another elsewhere on the screen. A useful short cut.*

On some screens a mystical floating indian appears (obviously he's seen The Doors*). The man disappears when* Prehistorik *hits him, leaving a special object, which, when collected, will aid our hero on his journey. Items of interest include a smart bomb, which stuns any creatures on screen, a clock for extra time, and a more powerful weapon, such as a stone axe.*



▲ *Here's the third means of acquiring nosh – by finding one of the few hidden locations. A jump which would normally lead to death led instead to this secret room underwater.*

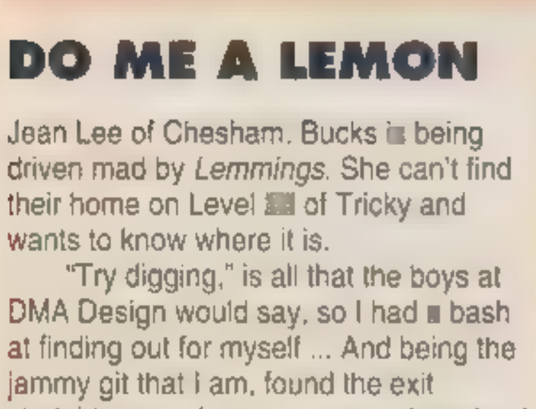


▲ *About halfway through the first level* Prehistorik *stumbles across a bunch of balloons. Grasping them, he rises into the air, eager to be guided across two screens filled with ferocious jumping fish, parrots and much merriment. It's a man's life in the stone age.*

DO ME A LEMON

Jean Lee of Chesham. Bucks is being driven mad by *Lemmings.* She can't find their home on Level 28 of Tricky and wants to know where it is.

"Try digging," is all that the boys at DMA Design would say, so I had a bash at finding out for myself ... And being the jammy git that I am, found the exit straight away. As you can see, Jean (and anyone else in the same boat), it's here ... (If you haven't got this far and want to tackle Level 28 of Tricky, here's a code which will allow you to do so: HMFH-CIOMDY).



● **GOT A PROBLEM?** Fear not, for we may be able to help – with anything game related, anyway. Just jot down as much detail as possible exactly what the problem is and send it to:
DO ME A LEMON, Games Week, New Computer Express, 30 MMonmouth Street, Bath BA1 2BW.

BRAT

AMIGA, ATARI ST A helping hand for all budding baby-minders from the authors themselves, collectively known as FoursField ...

● **IN GENERAL**
You only need to keep half an eye on Brat's progress through Bratland. Don't watch him directly. Instead keep your attention at least three steps ahead. This gives you more time to respond to the more animate obstacles.

Don't panic: Make full use of the Stop Scroll, Reverse Scroll and Stop Brat icons if things seem to be getting out of hand. This gives you time to think.

Always try to collect any milk bottles. They allow Brat to bounce back into Bratland exactly where he fell off. After a fall, simply click on the flashing bottle in the panel to activate it. Do this before the countdown ends, otherwise Brat will have fallen too far to be retrieved and lose a life.

Don't waste bridges when another way around can be used. You may need them later – in fact, they are essential deeper into Bratland.

If your inventory is full and you reach an essential item, drop surplus supplies in front of Brat so they can be picked up again as he moves on.

Use the rubber to get back money from misplaced arrows and scroll icons. Money's too tight to mention on the later stages.

Weights are extremely useful not only for blocking some of Bratland's bad guys, but for toggling trapdoors or switches.

Deeper into Bratland you will encounter hovering green bridges. Brat can only walk on to them when they aren't moving. Icons must be placed directly under Brat's feet when he is on a moving bridge.

● **TOYTOWN**
Many of Bratland's beings can be distracted from Brat's route. For example, mice like cheese, but beware once the mouse has finished its meal it will be back on Brat's trail. Keep 'em peeled for the cheese getting smaller.

Use the Green Cross Code when Brat arrives at a road. Placing a Lollipop Pole on the road before the car reaches it will stop the car for a reasonable time.

Here's a special tip which is best used on the last stage of Toytown.

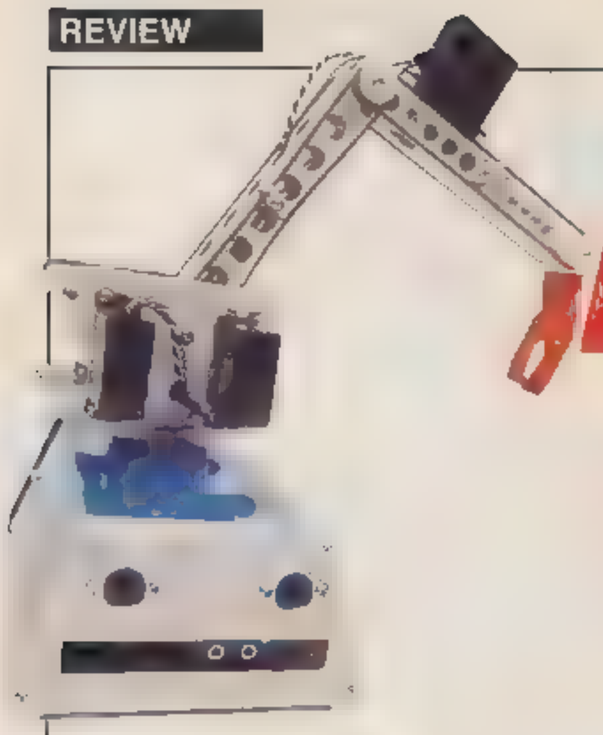
Spinning tops can be trapped thus: place a bridge piece on the edge of the pathway then allow the top to move on to it before blocking its exit with a weight. The weight can then be safely picked up for re-use.

● **PARKLAND**
A Stop Scroll helps to make the timing easier when jumping off roundabouts in ParkLand.

Drop meat to attract sharks as soon as they appear on screen. They may have gone before Brat arrives, only to return when Brat is swimming and vulnerable.

Submarines check in all directions for possible targets before firing multiple torpedoes. Make allowances for this when timing the launching of submarines.

Make sure you have a parachute before Brat walks onto the blue Parachute Jump arrows, as he automatically jumps off.



ARMING THE SCHOOLKIDS

PRODUCT: The Alfred Arm
MACHINE: Amiga
FROM: Think Limited
CONTACT: 021 384 4168

Robots are not just the stars of science fiction, they're here. And now they can be found not only on a factory production line, but also in the classroom. Dave Golder manipulates a mechanical arm from his Amiga.

The production-line robots of today are far from the fantastic gleaming metal figures of *Star Wars* and other pulp science fiction, but ask most schoolkids if they thought that they could program one and they would probably still react as if you had asked them to prove the existence of black holes using multi-dimensional calculus.

The Alfred Arm, however, is a fully working scale model of actual industrial robots – the Mars and the R2000 – specifically designed for use in schools. It comes in a package with driver software which allows you to manipulate the arm from an Amiga. The arm itself has two ports so that it can be connected to other peripherals, such as a turntable or a conveyor belt, which can also be controlled from the Amiga.

The Alfred Arm can be a valuable tool for developing analytical and problem solving skills

So, for example, you could set up a routine to have an object transported along the conveyor belt, picked up by the arm and carried to the turntable and the whole process would take just a few minutes to program.

As well being a fun introduction to the world of serious computer applications and robotics, it can be a valuable tool for developing analytical and problem solving skills. Ideally suited to 11 to 16-year-old school children, it could also be used as part of advanced projects for older children.

The software has been specifically designed with this in mind and is very simple to use; it should not take more than half an hour to learn how to manipulate the arm and set up a simple routine. The control screen makes use of such user-friendly devices as slider switches and icons so that students can concentrate on solving problems as opposed to the mechanics of getting the thing to work.

MAKING MOVES

The arm has six axis of motion (as shown in the diagram). Each axis is given a letter which corresponds to a slider switch on the software's control screen. So, for example, by pulling along switch A to the left, the arm will pivot on its base axis. The remaining slider switches, 1,2 and T, control any peripherals connected to the arm.

The position of the arm is also represented numerically in a grid at the bottom of the control screen; each axis has a range of positions from 0 to 255. So, for example, 0 for switch F, which controls the grabber, means that the jaws are fully closed, while 255 is fully open. These values can either be set by the slider switches or by editing individual numerical values directly on the grid.

You set up a command sequence, or 'program' by entering a series of command lines. Each command line comprises a set of nine values, one for each axis on the arm plus the three extra values for peripherals. The best way to enter a command line is to manually move the arm to the exact position you want it using the slider switches, then save by clicking on the 'save' button.

If you set up two command lines then run the 'program' the arm will move from the first position to the second. You can run the program as a loop, so that the arm moves back and forth between the two positions.

ONE SPEED

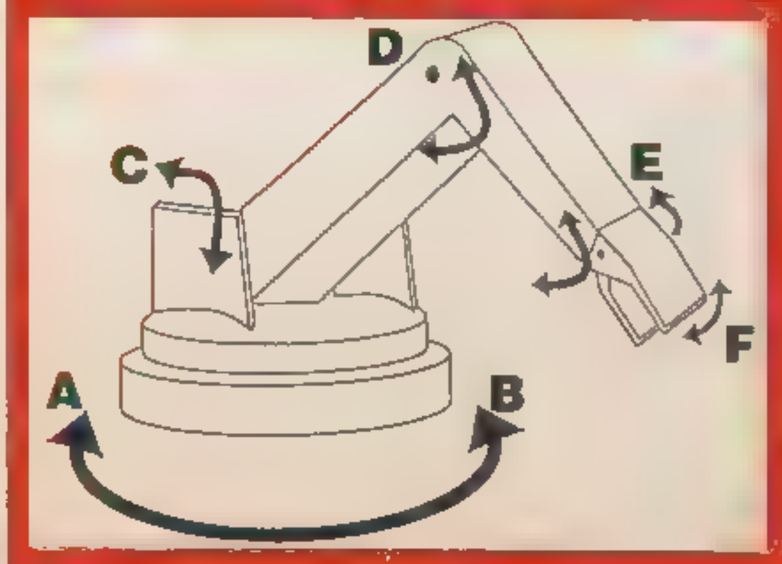
The only limit to the amount of command lines you can enter is the amount of memory you have available, so you can set up some really complex and lengthy sequences. All programs can be saved to disk.

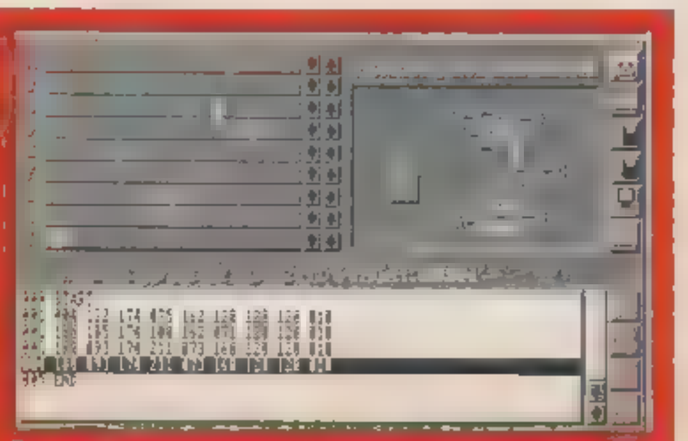
The arm actually moves at a very swift rate, and can work its way through a series of motions in a matter of seconds. In fact, one drawback is that you have no control over the speed, so it is difficult to co-ordinate the arm with any moving objects that are not controlled as part of the sequence which is limiting.

Another minus point is that for a package which is designed for classroom use, it is not very robust. The belts running from the servo motor are frighteningly delicate, and the cogs and wires are very exposed. It makes you wonder if something that looks like the results of a Mechano project is really worth £350. However, this does have some educational value in that you can see exactly how the arm works; indeed there is a transparent base to the arm so you can see the layout of the chips on the board. Perhaps a transparent casing over the other working parts would be a good idea.

It is also strange that Think Limited has decided to release the package for the Amiga, not the most popular of computers in schools and colleges. It is very unlikely that any would buy an Amiga just for the pleasure of being able to operate the Alfred Arm, which is a pity, because for younger children it is an original and worthwhile educational tool. ■

COMMANDING MOVEMENTS





The arm can be moved through each of its axis (A to F) by the sliding controls on screen. Each position is also represented numerically in a grid below the switches. Each horizontal line of this grid is one command line of a control sequence or program.

IS IT A MODEL OF SUCCESS?

FOR

- Fully working scale model of actual industrial robots.
- Easy to use software.
- Ideal for educational tool, not just for learning about robots, but in developing analytical and problem solving solving skills.

AGAINST

- Not very robust – too many exposed working parts which could easily get damaged in a classroom environment.
- You have no control over the speed.
- It is only available for the Amiga, which is not one of the most popular computers in schools.

PRICE

£399 (£360 for educational establishments)

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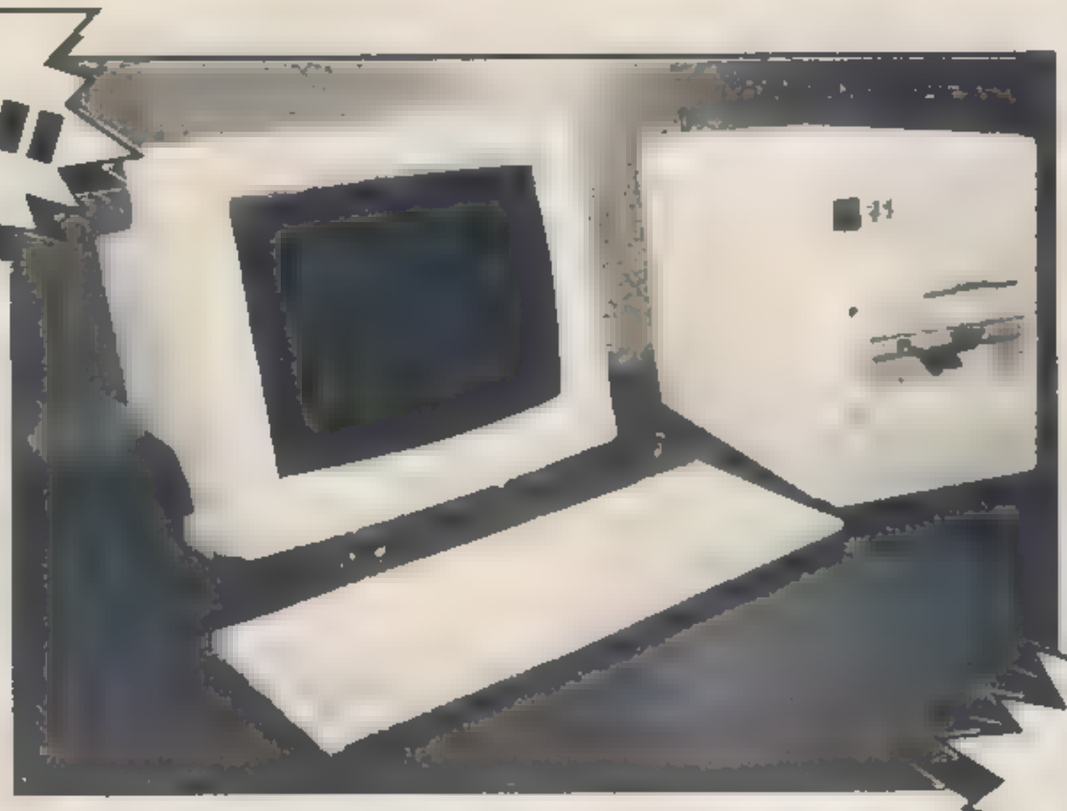

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COVER FEATURE

CD-I CALLS THE SHOTS

Software is piling up for Philips Compact Disc Interactive system. But is it any good? You can bet your life on it. Colin Campbell investigates...

If you're suffering from a deep fatigue brought on by the incessant babbling of 'future technology' freaks, then it's time for a break. Let's stop talking about how great things might be, and start looking at how fantastic they are. Right now.

CD-based computing is, without doubt, the corner stone of computing for the next decade, so it was no surprise to see well over a thousand delegates at the second Compact Disc Interactive Conference in London recently. They had all come to see how Philips' hardware platform had been exploited by the software developers. They wanted to know if it was any good, and most of them left not only with their doubts dispelled, but with a quivering sensation that, at last, they were involved in something really special.

Bernie Luskin, president of CD-I's leading software developer, American Interactive Media (AIM), set the tone of the two day event when he produced a large aerial photograph of the USA, with its cities lit up by a clear light.

"That," boasted Luskin, "is the CD-I market in America. Do you see where all those lights are? That's were the plugs are, and that's where we'll be pushing CD-I."

Now that's optimism. British publishing magnate Robert Maxwell might not know as much about CD-I as Luskin, but he reckons he's on to a good thing. "I know how to make money," he told the glittering assembly of computer and publishing business people, "I urge you to get into this thing".

The point is this. Powerful men and women have seen CD-I, and they are very impressed. They also confidently expect you to be impressed. Not you the experienced computer user, but you the consumer.

Here's why. CD–I is an extremely impressive piece of kit. It's ridiculously easy to use and could promise a way of dislodging tedious television as the nation's favourite info/entertainment medium. Generations brought up on TV, video and games consoles will feel at home with CD-I - it's more of the same but much better.

SPECIAL BRANCHES

Delegates were whizzed through half a dozen CD-I titles, all of which were far more fantastic than any piece of software or demo you're likely to see on a standard home computer format.

Harvest of the Sun is a life and works biography of Vincent Van Gogh. After a short introduction sequence you are presented with a model of the great artist's village. Each house represents a different icon which you can click on, and each in turn offers more branches to follow. So, you might be interested in Van Gogh's private life, or his disturbed mind. There are dozens of strands for you to follow. Each one presents you with smoothly changing stills of contemporary drawings, or of the man's work.

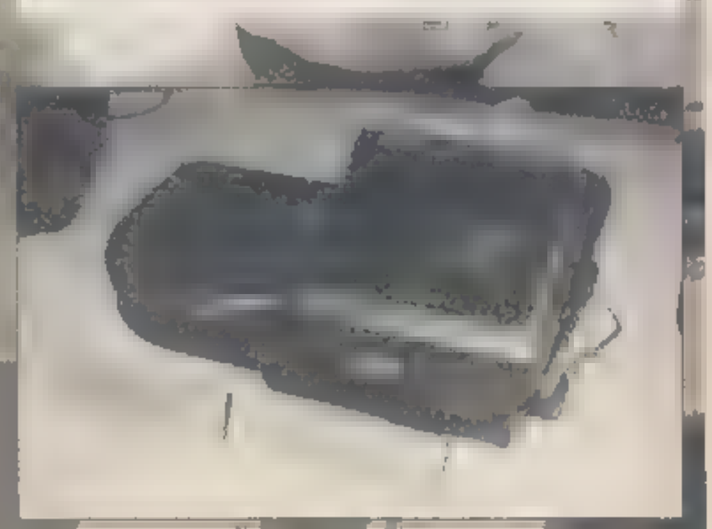
"I know how to make money. I urge you to get into this thing." Robert Maxwell on CD-I

In reality, you could glean all that information from a one hour TV documentary, but CD-I offers you the chance to point and click your way though the database at will. You take in what you want when you want. That's the lowest level of interaction CD-I offers.

Harvest of the Sun took nine weeks to produce, it's to be released in French, Japanese and English under the Arts and Culture label. There's no Full Motion Video in the program, but the production is so smooth and professional it is hardly missed. We'll come back to FMV later.

Budding photographers can actually improve their technique with Time-Life's *35mm Photography* tutorial. You are presented with a shot to take, of say, a man rowing a boat and then invited to choose a camera from several models before picking the shutter speed and such like. The boat rows in front of you, you take the ➤

• One of Sony's prototype CD-I machines due for release next year. Is this ghetto blaster with stereo sound and built-in colour LCD screen the ultimate yuppie accessory?



• And for the serious about town funster, there's the hand-held CD-I unit - with its colour LCD screen taking portable entertainment way beyond the primitive realms of today's Nintendo Gameboy.

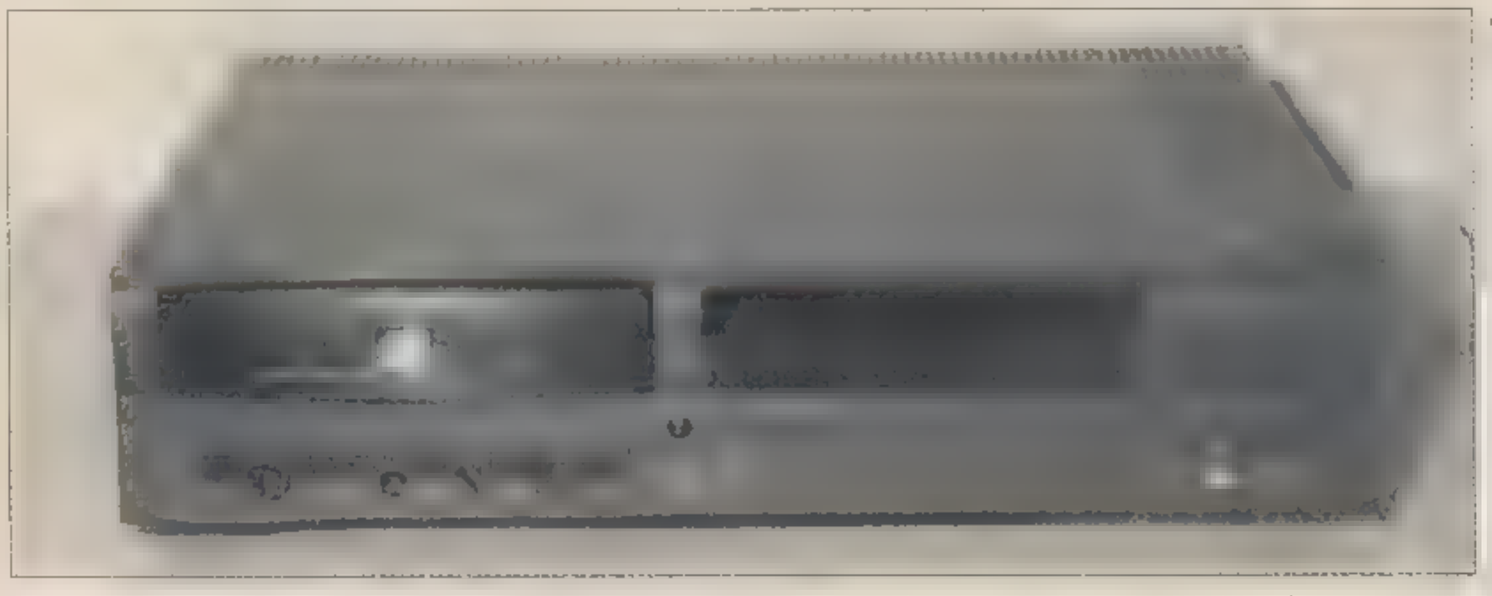
THE NO NONSENSE 'IT'S EASY AS ABC REALLY' GUIDE TO CD-I

Commentators are often apologising that CD-I is somehow a "difficult concept". This is nonsense.

● It's the same as a computer except you use a CD instead of a disk.
● It's the same as a computer except there are no commands. Everything is point and click and all icons are presented as an easy to understand picture of what the window represents.
● It's the same as TV except, instead of being forced to take a linear route through the programme, you dip in and out where you please.
● It's like an electronic book, but the index is built in so that it's all around you.
You can get to any piece of information just by following a clear and simple route. Everything is cross-indexed.

CD-I SYSTEM

THE WAY AHEAD

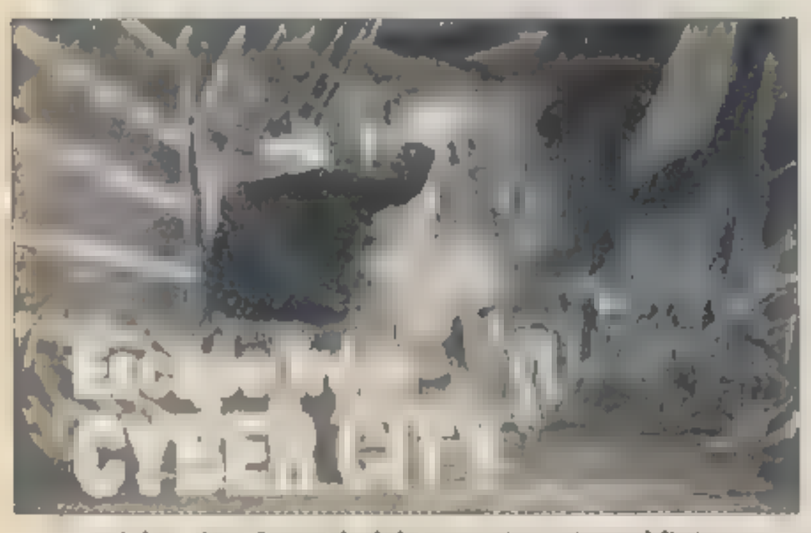


• One of the first CD-I machines off the shelves- the Philips 900 - like a cross between a video and a CD player for around £700.

shot, and a few seconds later the result is on the screen. Perhaps you should have used a wide angle lens, suggests the program.

CDs vary vastly in levels of sophistication. There's a disc of Pavarotti's works. You just click on the name of your favourite song, and it'll start playing with Karaoke style lyric guides (in Italian and English) scrolling up the screen.

At the other end of the scale is *Escape From Cyber City*, a game featuring animation sequences of the quality you would expect to see on Saturday morning children's television. But you don't just watch it, you're playing. The gameplay looks not far removed from *Dragon's Lair*. The difference is that *Lair* was pretty much a one-off for the 16-bit machines, *Cyber City* is what CD-I games *normally* look like.



• Cyber City: Fun with slick interactive animated fiction.

Another cartoon adventure is *Sandy's Circus Adventure* which is drawn in the cutesy *Baby Muppets* style, but which gives kids the choice of which on-screen characters the hero (a seal) should interact with.

REPEAT PERFORMANCE

All these programs, plus many more (see box) were on display in a mini exhibition, and there was much playing around and experimenting under way.

"We will be the pioneers of CD-I, the most versatile publishing medium ever invented." Jan Timmer, CEO Philips

Jan Timmer, Philips' chief executive officer, is the man who was largely responsible for turning the audio CD into a success. He's hoping for a repeat performance. "It's eight years since we introduced the CD, which was a revolution in sound reproduction. In the beginning there were only a few who believed that it would work, and the pioneers were those who saw the opportunities.

"We felt certain that we had success then and it's the same now. I am convinced that CD-I is going to be a success. My company has decided to put its money where its mouth is. We will be the pioneers of CD-I, the most versatile publishing medium ever invented."

HOW THE NINTENDO DEAL MUST SCARE COMMODORE

Until very recently the European games software producres were all in agreement. As far as the traditional games player was concerned, Commodore had done a better job than Philips in wooing top games software developers.

Commodore's rival CDTV boasts an impressive software list, with a wide ranging of good titles from respectable publishers. However, the sales figures of all these games put together pale into insignificance when compared with the performance of just one of the Nintendo games which will be appearing on CD-I.

Donkey Kong and *Super Mario* will both be among the Nintendo titles. Imagine this tidy little package being presented to the American public. An interactive TV set that plays your favourite video games (and has a mind-blowing golf game to boot).

Pretty irresistible for a middle class suburban family with disposable income, eh? Many of the kids who might have plumped for CDTV because of the impressive games list could well be having second thoughts.

WHAT ABOUT FMV?

Neither CD-I nor CDTV feature Full Motion Video (proper moving pictures, rather than animations). This is because video uses up a vast amount of memory. CDs can hold a great deal of information, but once you've got the text, narrative, stills and animation on the disk there's not a lot of room left.

However, Philips has announced that it has signed a deal with US firm C-Cube Systems which specialises in video compression chips. The firm's job will be to squeeze video on to the disks, necessary for the development of even more attractive CD-I titles.

WHEN, WHERE AND HOW MUCH?

CD-I's American and Japanese markets are likely to be more receptive to the new medium than Europe, and we will have to wait until about this time next year. Pricing has to be officially decided, but don't expect to have much change out of £700. Software will cost anything from £20 to £100. ■

• Open Sesame: Big names have already been signed up.

THE TOP CD-I TITLES ON THEIR WAY

The following titles will the first to appear for CD-I...

● *Sporting News Baseball.*
Motion picture quality baseball game with you facing the pitchers. Includes play-by-play commentaries.

● *United States Atlas.*
Pick any state, and see and hear its major attractions.

● *Paintschool.*
Electronic colouring book includes 200 different alphabet-based pictures to encourage learning.

● *Sargon Chess.*
Not just computer chess. There's also replays of great games in history, move analysis and a history of the game. 16 levels of difficulty.

● *Tell Me Why.*
Interactive learning book complete with pictures. As easy to use as teletext.

● *Time-Life Photography.*
Study the work of three leading photographers. Attend 25 interactive workshops.

● *Treasures of the Smithsonian.*
A walk though the famous Smithsonian Institute with 200 treasures to view and learn about.

● *Wings.*
Exciting World War One arcade adventure

• CD-I Golf is bound to be one of the major software titles for the machine. It's incomparably better than anything you've seen on even the best home computers or dedicated games consoles.

● *Children's Bible Stories.*
A series of interactive adventures based on the Good Book.

● *Louis Armstrong.*
All the jazz man's greatest hits, as well as some pretty animations, an interview and a visual biography. Other popular singers should follow.

● *Hot Seat:*
Adult trivia game with Max Headroom style host.

● *ABC Sports Golf.*
Motion picture quality graphics. Should become the best selling CD-I title, and will probably help sell the entire system.

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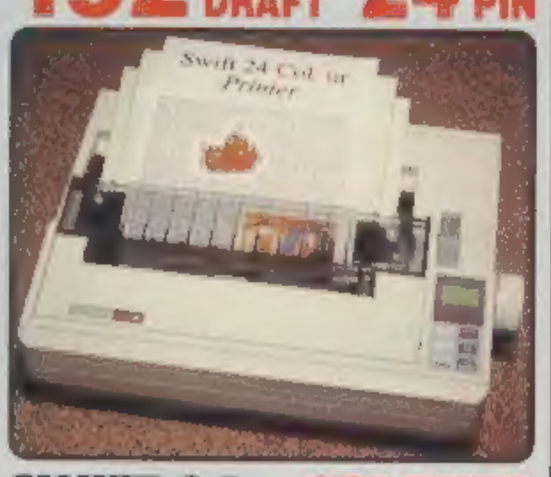

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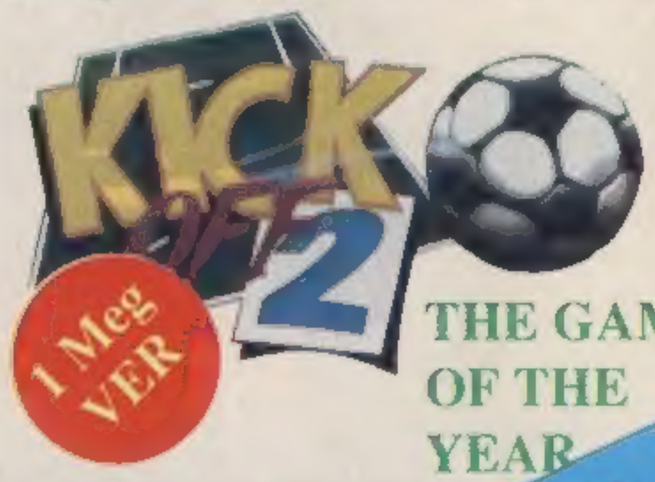

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